IRON AND STEEL ENGINEER

J. F. KELLY, Editor

CONTENTS

Volume IV January, 1927 Number I

Iron and Steel Exposition 1
- Exhibition Hall
- Floor Plan
- Prices and Sizes
- Contract Form
- Rules and Regulations
- Official Headquarters

Meetings and Papers 10

Trend of Recent Boiler Installations in Steel Works—
By W. B. Skinkle 11

General Specifications for Electric Overhead Traveling Cranes—Heavy Duty Steel Mill Service—
By AI&SEE Crane Standardization Committee 21

AI&SEE Recommendations Covering Rules for the Safe Operation of Electric Overhead Traveling Cranes 25

Rules for Guidance in Operation of Engine Stops—
By AI&SEE Safety Committee 27

General Specifications of A. C. Motors for Main Roll Drive 29

Index to Proceedings of the AI&SEE and Iron and Steel Engineer from 1907 to 1926—
- List of Authors 35
- List of Subjects 41
- List of Curves, Tables and Charts 50

Electricity's Contribution to the Iron and Steel Industry
(Main Roll Drives in the United States and Canada) 55

AI&SEE Standardized Commutating Pole Mill Type Motor
(Final Report of Standardization Committee) 88

Board of Directors and National Committees for 1927 92

Items of Interest 94

(List of Advertisers 20)

Published Monthly by

Association of Iron and Steel Electrical Engineers

706 Empire Building, Pittsburgh, Pa.

Entered as second-class mail matter January 25th, 1924, at Pittsburgh, Pa., under the Act of March 3rd, 1879.

Subscrpition Price $5.00 per Year. Single Copy 50c.

MEETINGS AND PAPERS

PITTSBURGH SECTION

R. F. Chaffin, Chairman J. F. Kelly, Secretary

Saturday, February 19th, 1927

Blue Room, Wm. Penn Hotel.

Dinner 6:30 P. M. Technical Session 8:00 P. M.

Subject:

"Turbines," by Mr. E. W. Pragst, Engineer, General Electric Company, Schenectady, New York.

Saturday, March 19th, 1927

Blue Room, Wm. Penn Hotel.

Dinner 6:30 P. M. Technical Session 8:00 P. M.

Subject:

"Power Factor Correction," by D. H. Feldman, Engineer, Electric Machinery Manufacturing Company, Minneapolis, Minn.

PHILADELPHIA SECTION

Saturday, February 5th, 1927

"Electrification of Boiler House Auxiliaries," by F. T. Leilach, Engineer, Consolidated Gas, Electric Light & Power Company of Baltimore, Baltimore, Md.

Saturday, March 5th, 1927

"A Symposium, the Parallel Operation of Motor Generator Sets, Rotary Converters and Rectifiers." To be handled by D. M. Petty, Elec. Supt., Bethlehem Steel Company, Bethlehem, Pa.

All meetings, unless otherwise noted, will be held at the Engineers' Club, 1317 Spruce Street, and will start promptly at 7:30 P. M. Dinner at 6:00 P. M.

CHICAGO SECTION

Wednesday, March 2nd, 1927

"Present Tendencies in the Application of Graphic Instruments," by Mr. J. W. Esterline, Pres., Esterline-Angus Co., Indianapolis, Ind.

BIRMINGHAM DISTRICT

Thursday, January 29th, 1927

"Electric Mill Drives," by H. A. Winne, General Electric Company, Schenectady, N. Y.

Chairmen and Secretaries

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EDITORIAL

TREND OF RECENT BOILER INSTALLATIONS IN STEEL WORKS

By W. B. SKINKLE*

In recent years, Steel Works Executives and Engineers have come more and more to the realization that while power and steam costs represent only a comparatively small percentage in the total cost of steel, the annual cost of these items represent an enormous total, and the possibility of attractive investments in modern equipment are limited only by the size and requirements of the power plants themselves.

It has often seemed strange that executives should surround their cash with every possible safeguard of checking and cross-checking, bonded employees, etc., and at the same time put millions of dollars each year in the hands of uninformed non-technical labor who are handling inadequate equipment, and place almost no check at all on the performance of either men or machines.

It is the purpose of this article to show the recent trend of development in boiler equipment in order to overcome as far as possible the condition just mentioned.

Any installation of boilers must be designed to handle a fuel which is easily available and the lowest in cost. For Steel Works, the most important of these fuels are Blast Furnace Gas and Coal.

A large number of careful surveys has convinced the author that under average conditions the blast furnaces which can provide sufficient hot metal to keep a modern Steel Works in operation will also provide sufficient Blast Furnace Gas to supply all of the steam required by the Works, provided that the Blast Furnace Gas and Steam are utilized by modern equipment, and this equipment is kept at a reasonably high state of operating efficiency. Exceptions to this statement would be Works producing finished products which require an exceptionally large amount of work per ton, such as cold strip, sheets and tin plates, wire, etc.

The question of how much gas will be produced by a blast furnace is one which is often asked and many so-called empirical answers are often advanced. Rough general figures are sometimes used which often lead to erroneous results. The Beacon-Brassert curves presented before the May, 1914, meeting of the American Iron and Steel Institute give what the author believes is the best solution to the question of Blast Furnace Gas production. In their original form, the heat content and quantity of gas produced were plotted against the coke rate of the furnace. The coke used was high grade, having a carbon content of 88.72%, and while formulae were published which took into account the carbon content of the coke, engineers were more or less inclined to use the curves. This often lead to serious over-estimation of the gas production, particularly in cases of a high ash coke having a lower percent of fixed carbon than that reported in the original paper.

The author has re-drawn these curves, basing the heat value and quantity of gas on the weight of Carbon in the coke. These curves have been carefully checked against the work reported by H. P. Howland in his paper "Calculations with Reference to the Use of Carbon in Modern American Blast Furnaces," presented before the American Institute of Hining and Metallurgical Engineers. The papers were found to agree very closely. The curves have been used by the author for several years and have been checked by a number of Steel Works Engineers and found to be accurate within a very small margin.

In Fig. 1, three curves are used to determine the quantity of heat available in the form of chemical energy at the furnace top per long ton of iron. Curve (A) gives the heating value of the gas in Btu. per cu. ft. of dry gas at 32° F. and 14.7# pressure. Curve (B) gives the cubic feet of dry gas at 32° F. and 14.7# pressure per long ton of iron produced. Curve (C) is the product of values obtained from points on curves (A) and (B) and represents the heat available in the form of chemical energy at the furnace top per long ton of iron produced.

In similar manner, the chemical analysis of the gas, and the air required to blow the furnace, are plotted against the carbon rates of the furnace.

In the curves of Fig. 2, the unaccounted for balance is assumed to be nitrogen and further that all this nitrogen comes from the blast. By referring back to curve (B) of Fig. 1, the total volume of nitrogen is readily obtained and from this the total volume of air reaching the furnace is easily calculated. In making calculations, however, it is well to note that this air given by the curves is net and due allowance should be made for leaks, humidity, etc.

If engineers and blast furnace men will check their recorded volumes of air as shown on furnace records, against the actual volume as shown by this curve, they will find some surprising errors in their records, particularly so if the furnace is being blown by rather old reciprocating blowing engines. The author believes that these curves are more accurate than the usual methods of measuring the various quantities given, and that their value has been very largely overlooked since their original publication.

In using blast furnace gas as a boiler fuel, the condition of this gas is a very important factor. Many engineers believe that the raw, dirty, hot gas should be used, while a smaller number believe that the gas should be used washed clean, dry and saturated at a comparatively low initial temperature.

The author has recently made a fairly complete set of calculations in which an attempt was made to determine how much heat would be absorbed by a boiler if the gas entering the combustion chamber was in either of the following conditions:

*Power Engineer, Pittsburgh, Pa.

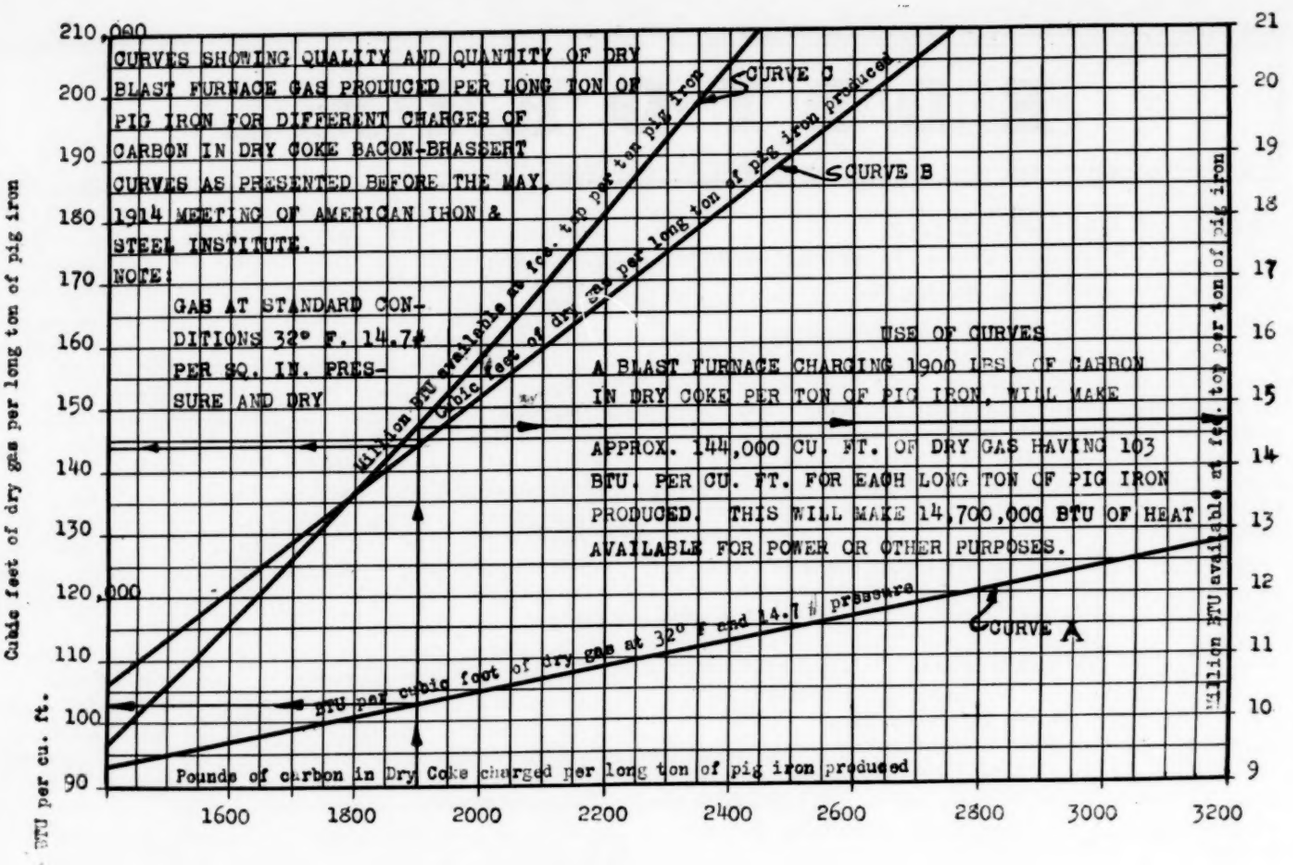

CURVES SHOWING QUALITY AND QUANTITY OF DRY BLAST FURNACE GAS PRODUCED PER LONG TON OF PIG IRON FOR DIFFERENT CHARGES OF CARBON IN DRY COKE BACON-BRASSERT CURVES AS PRESENTED BEFORE THE MAY, 1914 MEETING OF AMERICAN IRON & STEEL INSTITUTE.
NOTE:
GAS AT STANDARD CONDITIONS 32° F. 14.7# PER SQ. IN. PRESSURE AND DRY
USE OF CURVES
A BLAST FURNACE CHARGING 1900 LBS. OF CARBON IN DRY COKE PER TON OF PIG IRON, WILL MAKE APPROX. 144,000 CU. FT. OF DRY GAS HAVING 103 BTU. PER CU. FT. FOR EACH LONG TON OF PIG IRON PRODUCED. THIS WILL MAKE 14,700,000 BTU OF HEAT AVAILABLE FOR POWER OR OTHER PURPOSES.
CURVE C
CURVE B
CURVE A
Million BTU available at ref. top per ton of pig iron produced
Cubic feet of dry gas per long ton of pig iron
BTU per cu. ft.
Million BTU available at ref. top per ton of pig iron
Cubic feet of dry gas per long ton of pig iron produced
BTU per cubic foot of dry gas at 32° F and 14.7 # pressure
Pounds of carbon in Dry Coke charged per long ton of pig iron produced
210,000
200
190
180
170
160
150
140
130
120,000
110
100
90
21
20
19
18
17
16
15
14
13
12
11
10
9
1600
1800
2000
2200
2400
2600
2800
3000
3200

FIG. 1

(1) Washed clean, dry and saturated at 80° F. and 14.7# pressure.

(2) Unwashed raw gas entering the boiler at 246° F., carrying 35 grains of moisture at the temperature given.

Air for combustion in both cases was furnished at 80° F. and the products of combustion were cooled to 600° F. by passing through the boiler. The following facts were brought out by the calculations:

	Raw Hot Gas	Washed Cold Gas
Total heat, (sensible and chemical), in 1 cu. ft. of dry gas referred to 32° F. and 14.7#-----	117.2 Btu.	107.0 Btu.
Volume of products per cu. ft. of dry fuel gas----------	1,733 cu. ft.	1.626 cu. ft.
Combustion temperatures----------	2332° F.	2405° F.
Heat absorbed by boilers per cu. ft. of original fuel gas when cooled from combustion temperature to 600° F.----------	85.9 Btu.	83 Btu.

In looking over these values, it will be noted that the raw hot gas had a lower combustion temperature than the cold washed gas. This is easily accounted for by the greater volume of products from the raw gas. The difference in volume is composed entirely of water vapor which has nearly twice the specific heat of the other elements and must be raised to the full temperature of combustion without in any way contributing to the heat of the reaction. It will also be noted that although the raw hot gas entered the combustion chamber carrying 10.2 Btu. more total heat than the cold washed gas, it only gave up 2.9 Btu., or 3½% more heat to the boiler. This in turn can be accounted for by the fact that the larger volume of moisture in the products of combustion of the raw hot gas carries more heat away from the boiler when discharged at a given temperature.

Fig. 3 shows the cooling curve of products of combustion from these two gases. The values along the lower margin represent the quantity of heat from 1 cu. ft. of the original fuel gas which was absorbed by the boiler when the products are cooled from combustion temperature to the stack temperature shown along the vertical line. It will be seen from these curves that in the case of the raw hot gas, the stack temperature only has to rise 75° F. before the heat given up by both gases are equal.

From a practical standpoint, it must be remembered that raw hot gas carries large quantities of fine dust into the flame and that at combustion temperatures a great deal of this dust will be sintered and made very sticky. These small sticky particles will adhere to the boiler tubes and after a comparatively short run will form a heat insulating blanket that will prevent the ready transfer of heat from the products of combustion to the water inside the boiler tubes. It would be only a short time before this heat insulating blanket would cause a rise in stack temperature of more than 75° F. and under these conditions the raw hot gas is an actual detriment rather than an aid. Soot blowers will not remove this blanket of slag. For these reasons, the author believes that the use of raw, hot,

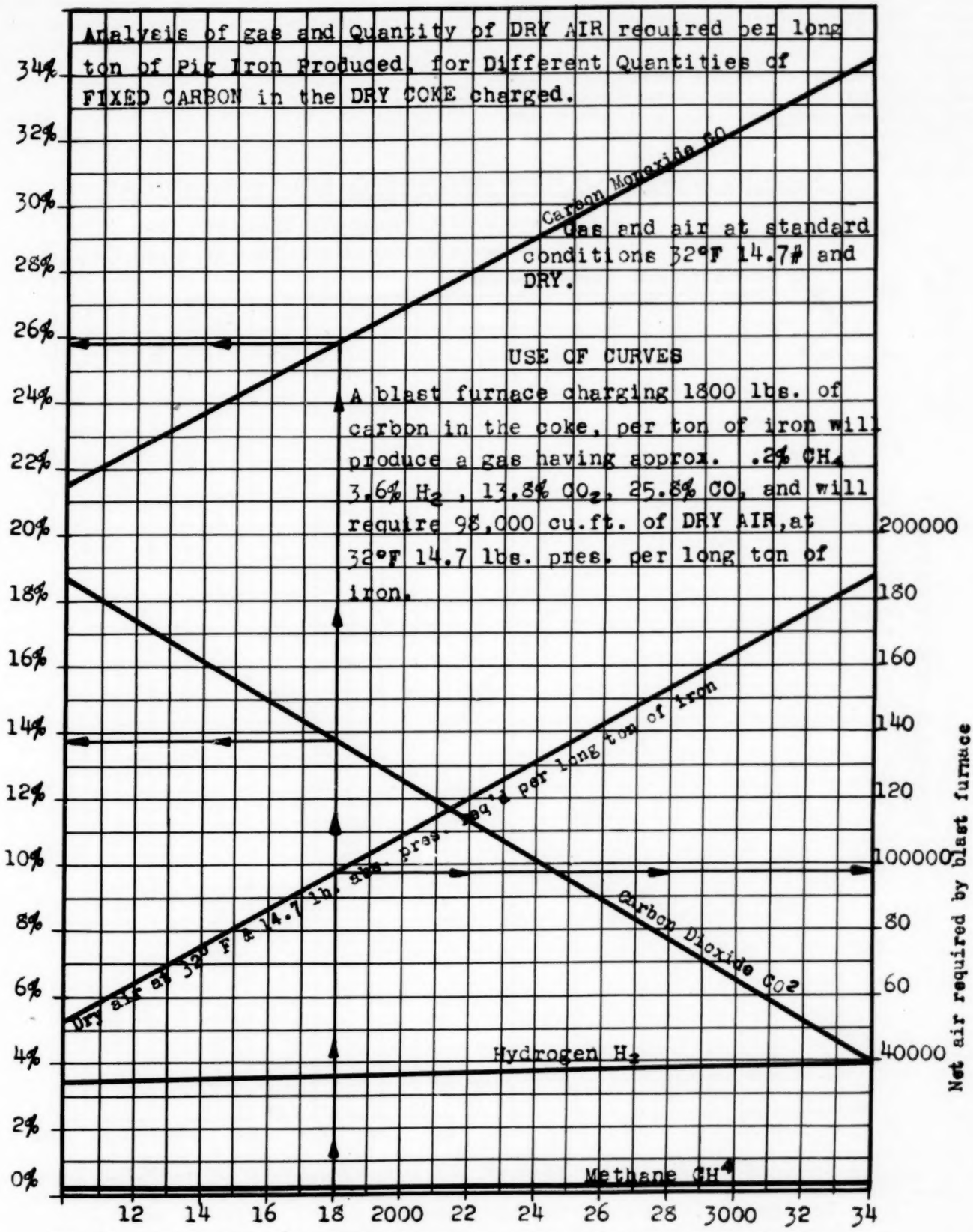

Analysis of gas and Quantity of DRY AIR required per long ton of Pig Iron Produced, for Different Quantities of FIXED CARBON in the DRY COKE charged.
Carbon Monoxide CO
Gas and air at standard conditions 32°F 14.7# and DRY.
USE OF CURVES
A blast furnace charging 1800 lbs. of carbon in the coke, per ton of iron will produce a gas having approx. .2% CH4 3.6% H2 , 13.8% CO2, 25.8% CO, and will require 98,000 cu.ft. of DRY AIR,at 32°F 14.7 lbs. pres. per long ton of iron.
Dry air at 32° F & 14.7 lbs. stat. pres. sq.i per long ton of iron
Carbon Dioxide CO2
Hydrogen H2
Methane CH4
34%
32%
30%
28%
26%
24%
22%
20%
18%
16%
14%
12%
10%
8%
6%
4%
2%
0%
200000
180
160
140
120
100000
80
60
40000
Net air required by blast furnace
12
14
16
18
2000
22
24
26
28
3000
32
34
Pounds of carbon (in DRY coke) charged oer long ton of iron.

FIG. 2

dirty gas is greatly over-rated and that both for reasons of efficiency and for continuous operation the expense of thoroughly cleaning blast furnace gas for boiler fuel is fully justified.

The use of partially washed gas is worse than the use of raw gas. The partial washing removes only the larger particles of dust and leaves the smaller ones. These are easily sintered and form the chief source of slag which deposits on the tubes. The larger particles often act as a scour and their bombardment of the tubes aids in the removal of the blanket found by the smaller particles.

The problem of burning blast furnace gas under boilers has been thoroughly solved for some years by proportioning burners or regulating apparatus

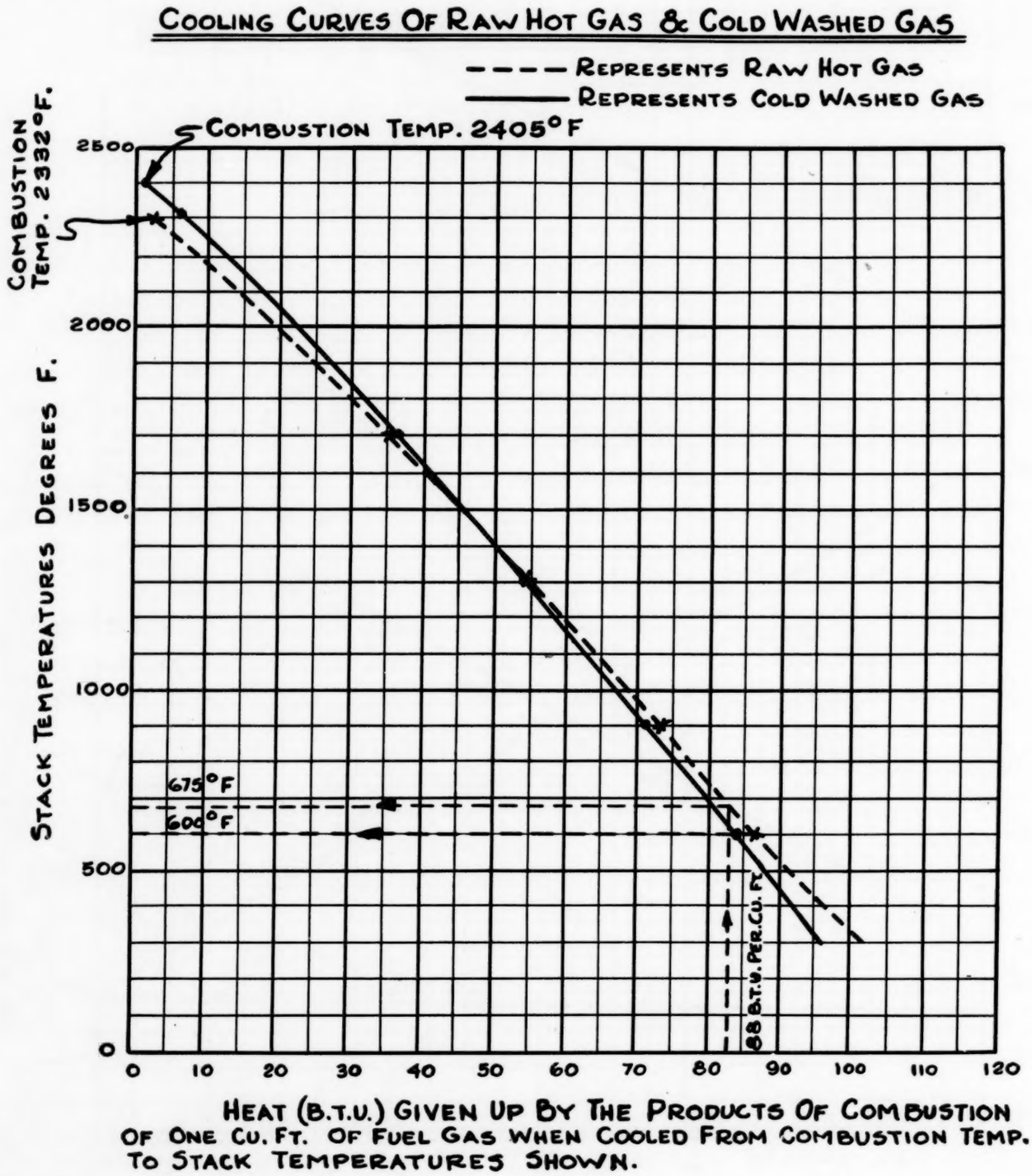

COOLING CURVES OF RAW HOT GAS & COLD WASHED GAS
---- REPRESENTS RAW HOT GAS
——— REPRESENTS COLD WASHED GAS
COMBUSTION TEMP. 2405°F
COMBUSTION TEMP. 2332°F.
STACK TEMPERATURES DEGREES F.
2500
2000
1500
1000
500
0
675°F
600°F
88 B.T.U. PER CU. FT.
0 10 20 30 40 50 60 70 80 90 100 110 120
HEAT (B.T.U.) GIVEN UP BY THE PRODUCTS OF COMBUSTION OF ONE CU. FT. OF FUEL GAS WHEN COOLED FROM COMBUSTION TEMP. TO STACK TEMPERATURES SHOWN.

FIG. 3

controlling the air supply and need not be discussed in detail here.

The problem of regularity of fuel supply is, however, a very important one and should be given very careful consideration.

Blast furnace gas is of low heating value and is produced in such large volumes that regulation of supply by providing storage facilities is prohibitive on account of cost. Blast furnace gas production is practically continuous but is subject to a series of short interruptions during regular operation and to longer interruptions due to accidents or curtailed operations. For this reason, it becomes imperative to augment the supply of gas fuel by some auxiliary fuel which will take care of these periods of gas shortage. This may be accomplished by using either a solid, liquid or pulverized auxiliary fuel. The solid fuel is usually coal burned in a stoker-fired boiler. The chief difficulty with this type of auxiliary fuel is its relative slowness in "getting on the job" when a sudden shortage in gas supply is encountered and the necessity of always keeping a bed of burning fuel constantly ready but operating at low rating. This frequently results in the operating men carrying the "'base load" of the plant on the stoker-fired boilers, with the result that during periods of high gas production, the excess gas is often bled to the atmosphere.

The particular advantage of either liquid or pulverized fuel for auxiliary purposes are: (1) There are no banking losses during periods of high gas production; (2) Either fuel may be burned in the same boiler setting that is used for gas; (3) Either fuel may be burned in combination with the gas; (4) The change from gas to auxiliary fuel or vice versa may be made automatically and requires only a few seconds; (5) The investment in spare boilers burning solid fuel only may be eliminated.

The author's opinion is that the cost of producing steam with auxiliary fuel is a matter of secondary importance in a modern Steel Works Steam Plant, inasmuch as it should operate only a small per cent of the time. For this reason, the investment in special equipment for auxiliary fuel should be kept as low as possible.

Most Steel Works, however, are now going through a transition stage where new installations of boilers are being made, but where more or less ancient steam consuming equipment requires the generation of a considerable quantity of steam from fuels other than blast furnace gas. In such a case, the cost of generating steam from auxiliary fuels becomes more important and larger investments in equipment that will reduce this cost are justified. Such an installation is now being considered for a large Steel Works. It has a number of novel features which will be described and offered for the consideration of engineers interested in this subject.

Fig. 4 shows a general diagramatic outline of the proposed installation. The boilers will each contain approximately 20,000 sq. ft. of heating surface, and it will be fired with blast furnace gas as the chief fuel and pulverized coal as the auxiliary fuel. The path of the products of combustion through the boiler is indicated by arrows. At the boiler exit the gases are split, a portion passing through an air preheater and the balance through an economizer. After passing through these units, the gases reunite at the induced draft fan and are driven out of the stack.

The combustion chamber in this setting is unusually large and no water cooling of the brickwork is attempted, though parts of the setting will probably be air cooled. It will be noted that no tunnel effect is employed for the burning of blast furnace gas. The presence of the hot setting walls is expected to insure ignition and complete combustion of the gas at all times without special refractory

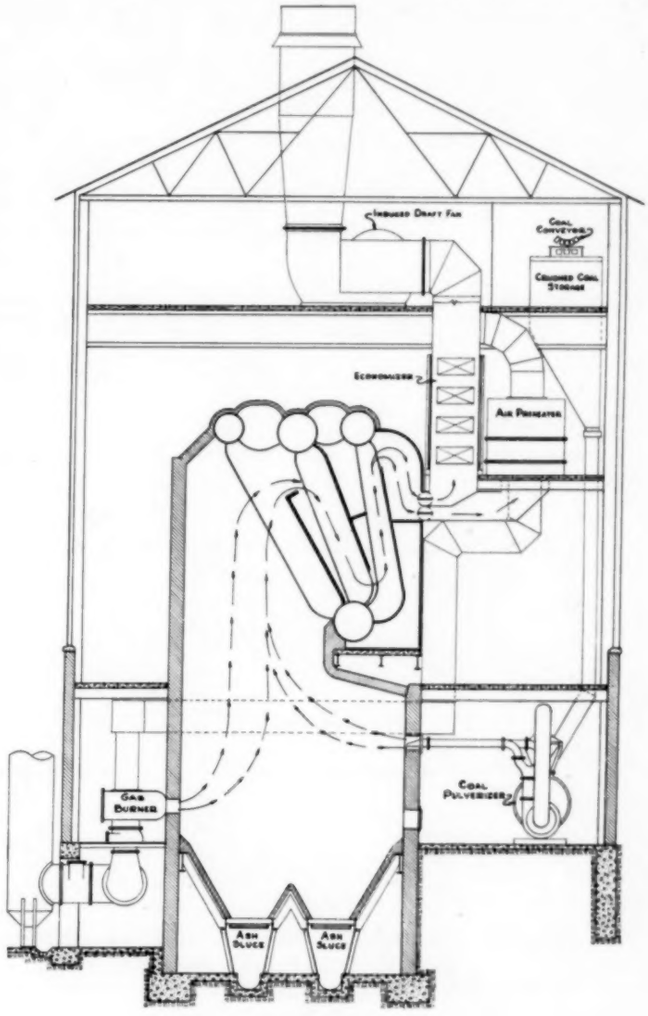


Fig. 4

surfaces. The pulverized coal burners are located on the opposite side of the setting from the blast furnace gas burners and slightly above the level of the latter. Possible operating difficulties caused by the deposits of ash from the pulverized coal have led to the consideration of special hopper bottom air-cooled ash pits. This design is expected to prevent slagging of ash in the bottom of the combustion chamber and to facilitate its removal from the furnace and discharge by sluiceway to an outside ash sump.

Crushed coal is delivered on railroad tracks adjacent to the boiler house, dumped from the cars to a pit from which it is elevated by a skip hoist to an overhead belt conveyor inside of the boiler house

and distributed by this conveyor to the bins located above each pulverizing unit. Unit type of pulverizers have been favored to eliminate the hazards, complication and greater first cost attendant on a central pulverizing system.

For this installation, five combinations of boiler equipment were considered:

1. Boiler only.
2. Boiler and economizer.
3. Boiler and air preheater.
4. Boiler with economizer and air preheater in series.
5. Boiler with economizer and air preheater in parallel.

The fifth of these combinations was chosen after considerable study, because the investment involved was justified by the financial returns and that combination possessed the following advantages, all of which were held by no other of the five considered:

1. **Greatest thermal efficiency.** A blast furnace gas-fired boiler with preheater only or with economizer only, cannot reduce the temperature of the stack gases to as low a point as a boiler equipped with both air preheater and economizer. This is due to the great weight of stack gases per Btu. liberated in the furnace. At the efficiencies expected, all the air required for combustion of the gas can be preheated 100° F. for an approximate reduction of flue gas temperature of 50° F. Thus, if the gases left the boiler at 600° F. and air was to be preheated to 450° F., the temperature of the gases leaving the air preheater would be approximately 420° F. The selected arrangement is expected to give an exit gas temperature of approximately 300° F. Likewise, if an economizer of sufficient size to secure the same exit temperatures be installed, it would be so large that steam could be generated in the economizer at times when the boiler was dirty. An economizer small enough to eliminate this possibility would not give the desired exit temperatures.

2. **Highest preheated air temperature.** An air preheater can heat air to a point somewhat below the temperature of the gases entering the preheater. so the highest air temperature will be obtained only when the air preheater receives gases direct from the boiler. High air temperatures are especially desirable with blast furnace gas firing.

3. **Lowest first cost of boiler.** When an economizer or air preheater or a combination of the two is used after a boiler, the boiler can be made smaller and the heat which would ordinarily be absorbed in the last pass will be absorbed in the preheater or economizer, which will cost less than the boiler surface and which are more efficient heat absorbers under those conditions than the last pass of a boiler. An interesting comparison was made of a boiler large enough to give an exit gas temperature of 500° F. and a smaller boiler with an air preheater and economizer. The large boiler cost slightly more than the small boiler, air preheater and economizer combined, but where it gave an exit temperature of 500° F., the combination gave an exit temperature of about 300° F.

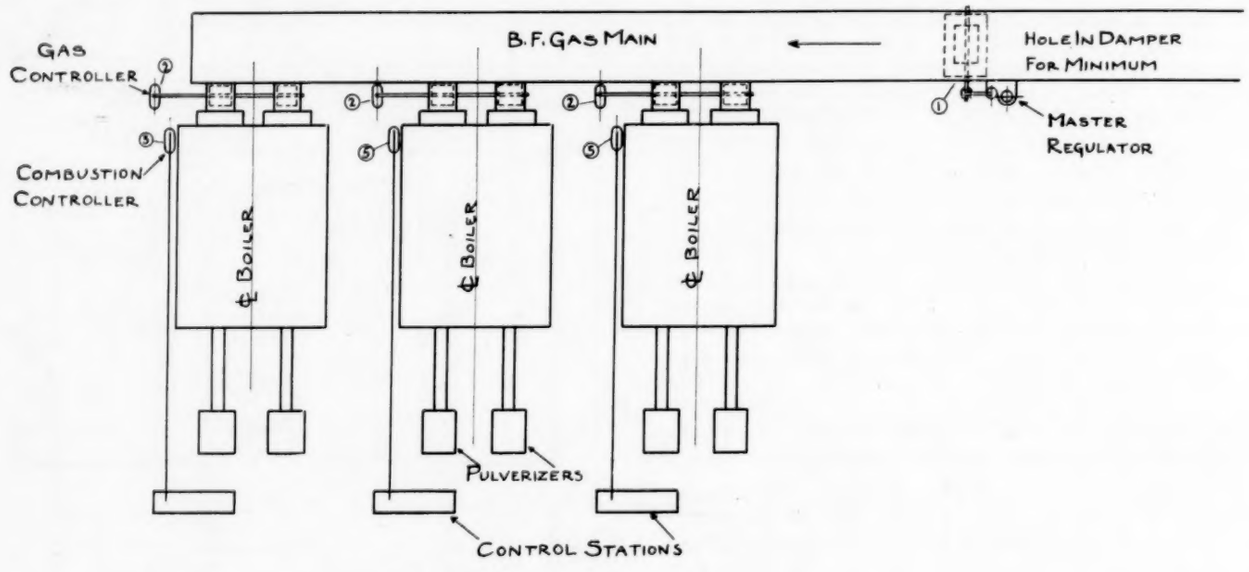


Fig. 5

4. **Greatest thermal head.** In the combination chosen, the mean temperature difference between gases and the water or air being heated, is greater than for any other combination. This is due to the use of a smaller boiler and higher gas temperatures leaving the boiler, and the arrangement of air preheater and economizer in parallel, so that each receives gases direct from the boiler instead of gases of a lower temperature. This makes possible the use of smaller air preheaters and economizers.

5. **Low draft loss.** The draft loss through the unit chosen will be the sum of the draft loss of all the gases passing through the small boiler plus the draft loss of a share of the gases passing through the economizer or air preheater, depending on which one has the greater resistance. If the air preheater and economizer were in series, the draft loss would be that of the boiler plus that of all the gases passing

through the economizer plus that of all the gases passing through the air preheater.

6. **Preheating of Feed Water.** The temperature of the water leaving the feedwater heater in this plant is not very high and the rise in water temperature gained in the economizer is desirable before the water is used as boiler feed.

The control system on these boilers will be one of the most important features contributing to the successful operation of the installation. This apparatus will consist of a series of regulators, some interconnected, and same independent, which control each function of the operation of each boiler.

Fig. 5 is a general arrangement diagram of the three boilers in the proposed installation and shows the relative location of the various regulators. Regulator No. 1 controls the pressure on the gas main outside of the boiler house. The damper in this main is of the ordinary butterfly construction, having a hole in its center of sufficient size to permit a supply of gas necessary for minimum operation of the boiler house which occurs on Sundays and Holidays. In order to obtain maximum efficiency in plant operation, it is necessary to have all blast furnace gas used to the best advantage in all parts of the Plant. This includes the stoves as well as the boilers. The most successful combustion equipment for blast furnace stoves is one which will require the least regulation, and the least regulation can be obtained when the gas pressure at the stove burners is maintained, as nearly as possible, at a constant pres-

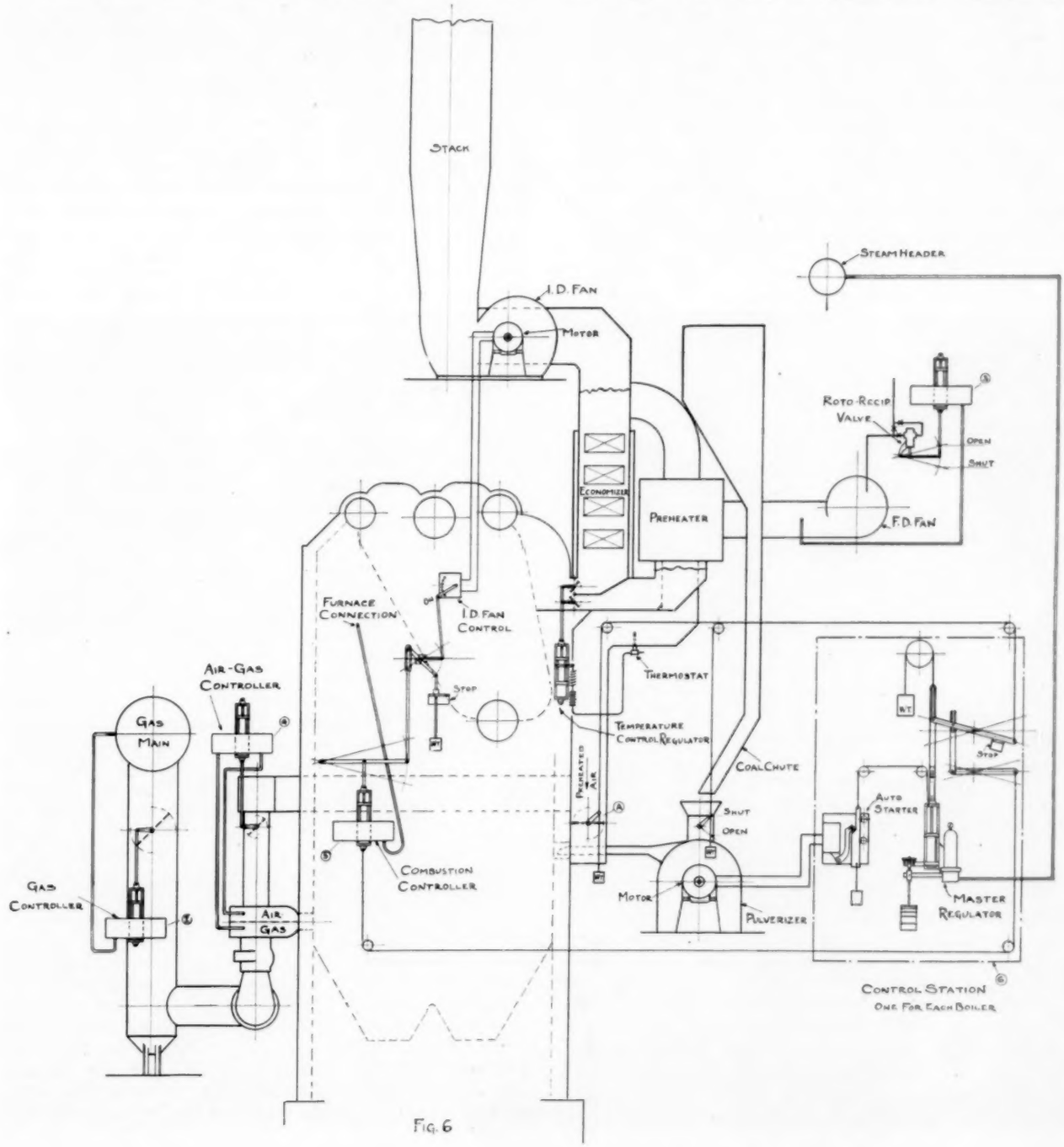


Fig. 6

sure. In this installation, an attempt has been made to obtain these conditions. The boilers will use all gas not wanted in other parts of the Plant up to that quantity required to meet the demand for steam. If gas in excess of these requirements is produced, the bleeders on the gas main will open when the pressure in the gas main exceeds that predetermined pressure set for the stove burners.

Fig. 6 is a diagramatic layout of the control system on these boilers.

After passing regulator No. 1, the gas enters the branch mains connected to each boiler and passes a second butterfly damper, the position of which is controlled by regulator No. 2.

The function of regulator No. 2 is to open the butterfly valves when the gas pressure in the boiler house gas main rises, and to close them when the pressure drops. One of these regulators is attached to each boiler. Preferably, they are set to operate at different pressures. For example, suppose the minimum pressure permitted for a boiler is equivalent to 3" of water. Suppose again, the gas pressure on the entire system for any reason at all was dropping, regulator No. 2 would start closing the valves gradually on all three boilers. At say 4½" water pressure, the valve on the first boiler would be entirely closed and the gas supply shut off from this unit. If the gas pressure then remained constant, the other two boilers would take the supply and the butterflies would adjust their position to the new pressure. If the gas pressure continued to drop, the dampers on the second boiler would be entirely closed at say 3¾" of water pressure. All the gas which was then supplied would be fed to the one remaining boiler. If the gas pressure dropped to 3", the butterfly on the third and last boiler would be entirely closed, thus cutting this bank of boilers entirely away from its supply of blast furnace gas. When the pressure returned, the butterfly valves would open in the reverse order to their closing and the boilers would again start steaming with blast furnace gas as fuel. These regulators are independently operating units and are not interconnected with other parts on the boiler control.

Regulator No. 3 is another entirely independent unit which controls the speed of the forced draft fan and maintains under all conditions a positive predetermined pressure of air in the forced draft air ducts. Only one of these units is required for all boilers

Regulator No. 4 controls a butterfly valve in the air duct immediately in front of the gas burner and maintains a positive predetermined relation between the pressures of gas and air in the burner boxes. The relation of the gas pressure and the air pressure is maintained at a point which gives the maximum combustion efficiency. There is one of these units on each boiler.

Regulator No. 5 is actuated from the pressure in the combustion chamber and is connected to the control apparatus of the induced draft fan motor and to the actuating mechanism of the auto-starter controlling the fuel pulverizing units. There is one of these control units on each boiler.

Regulator No. 6 is the main control unit of the boiler and is actuated chiefly from the pressure in the main header of the boiler house. From it are controlled the starting, stopping and fuel feed to the pulverizing unit and the air of combustion for the pulverized fuel. This unit is located in the main control station. There is one at the back of each boiler.

Regulator No. 7 is a thermostatic mechanism which actuates the outlet dampers at the back of the boiler and controls the proportion of products of combustion which pass through the air preheater and economizer. This regulator may be set to maintain either a constant preheat in the air of combustion or a constant maximum temperature of the water passing through the economizer. There is one of these units on each boiler. In initial trials, a constant preheat of the combustion air will be maintained. Inasmuch as these boilers are to be located in a Plant which is burning a large quantity of coal in stoker-fired boilers, there has been no attempt to extend regulating apparatus to control the supply of blast furnace gas fed to the boilers, other than the regulator No. 1, which maintains a positive pressure in the gas mains outside the boiler house.

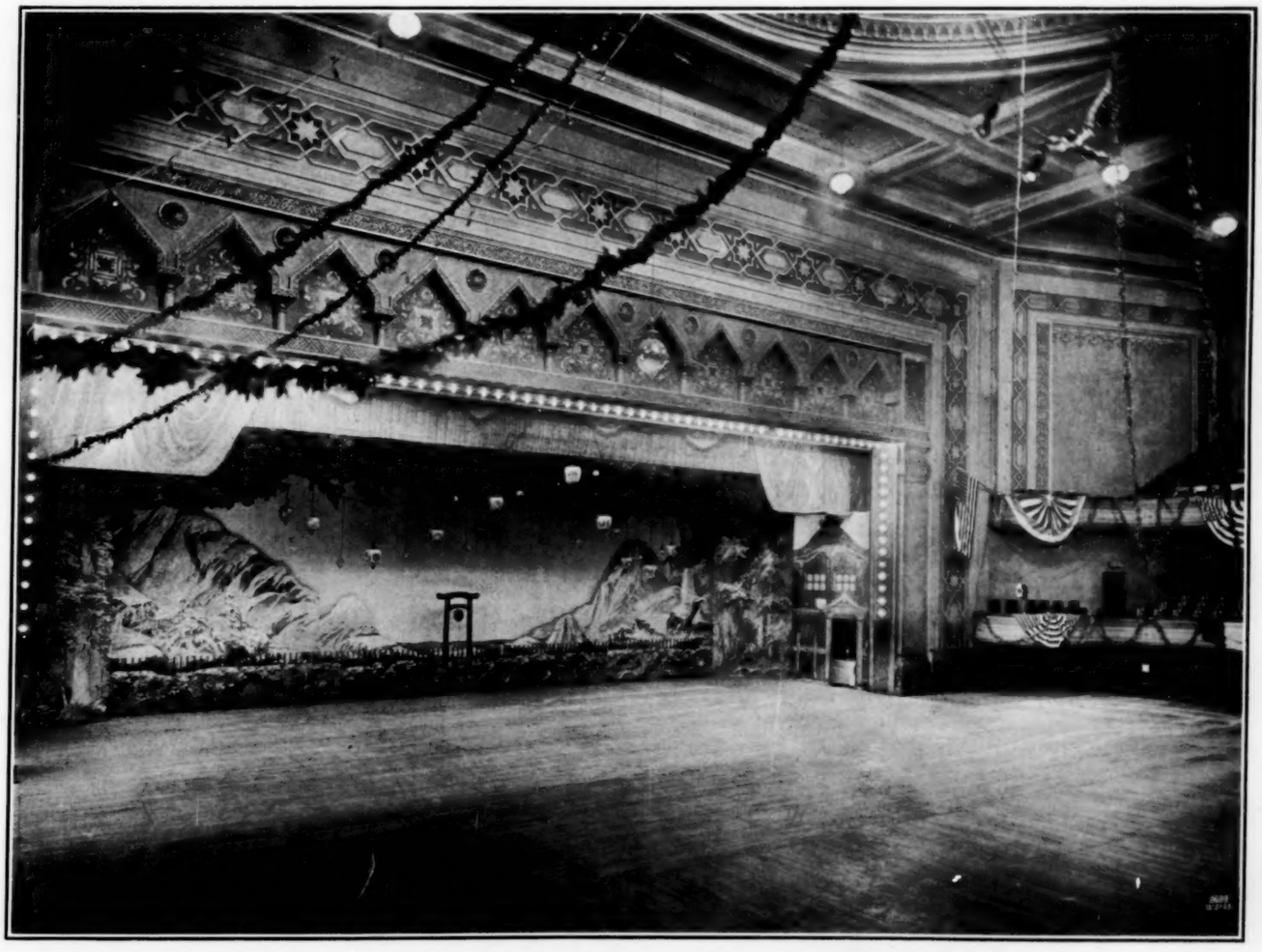
There are other control systems in this Plant which regulate the amount of steam produced in stoker-fired boilers, and it is the intention to take all of the blast furnace gas available into these boilers. If any control requiring a reduction in the total quantity of steam produced is required, the control apparatus on the stoker-fired boilers or on other boilers fired by blast furnace gas will reduce the loads on those units, thereby allowing the three units being described to consume all of the gas that is fed to them.

It is interesting to trace some of the possible combinations of operating conditions which this control apparatus may be called upon to meet:

First: Suppose there is a drop in steam pressure which has actuated the control apparatus on other boilers in the Plant to a point where they are working at maximum capacity, and suppose the butterfly valve of regulator No. 2 is wide open, a further drop in steam pressure will actuate regulator No. 6 and start the motors of the pulverizing units without, however, feeding them any fuel. A further drop in steam pressure will open the fuel supply mechanism to the coal pulverizing units and also open the damper A, which controls the air supply for the combustion of the pulverized fuel. We then have a condition where both blast furnace gas and pulverized fuel are being fed to the boilers simultaneously. If the steam supply continues to drop, the fuel supply mechanism on the pulverizer and the damper A are opened further, thereby increasing the quantity of steam generated from pulverized fuel. If the demands for steam become so great that the full quantity of blast furnace gas is being fed to the boiler simultaneously with a large quantity of pulverized fuel, so that the capacity of the induced draft fan is being seriously overtaxed and a positive pressure is being built up in the combustion chamber of the boilers, regulator No. 5 will act and the supply of pulverized fuel will be reduced to a point where the desired maximum pressure in the combustion chamber is maintained regardless of how much the steam pressure continues to fall. If, on the other hand, maximum gas is being fed to the boiler simultaneously with pulverized fuel and the gas pressure starts to drop, regulator No. 2 comes into play and

reduces the quantity of blast furnace gas which reaches these boilers so that a constant pressure of gas is maintained at the stove burners, regardless of the demand for steam. With a reduced quantity of blast furnace gas being fed to the boiler, the pressure in the gas box of the burner is reduced, which in turn acting through regulator No. 4, reduces the quantity of air reaching the combustion chamber through the blast furnace gas burner. If the demands for combustion air increase to a point where the pressure in the air duct falls below a predetermined pressure, regulator No. 3 actuates the control apparatus on the forced draft fans and this pressure is returned to its proper amount. If at any time the gas pressure returns and the boiler is being fed with pulverized fuel, regulator No. 2 will act in the reverse manner to that already described, opening the butterfly valves and returning the supply of gas. This automatically operates regulator No. 4, returning the supply of combustion air for this gas. If the pressure in the combustion chamber of the boiler builds up, regulator No. 5 is brought into action and its operating mechanism starts cutting down the supply of fuel fed to the pulverizer, and simultaneously the supply of air reaching the boiler through damper A. If the steam pressure builds up and is returned to normal, and pulverized fuel becomes unnecessary, regulator No. 6 automatically cuts off the supply of pulverized fuel and stops the pulverizing motors. The maximum supply of pulverized fuel which may be fed to any of these boilers will be determined by experiment and will be that quantity of fuel which the boiler can handle without causing undue destruction to the brick-work, owing to excess temperatures created by combustion. It is hoped that the installation of these boilers will show that it is possible to carry the base load of a large Steel Works on blast furnace gas-fired boilers and at the same time use all of a fairly constant supply of gas which is subject to sudden checks, replacing almost instantly any deficiency in the supply of blast furnace gas with an auxiliary fuel, and regulating the supply of this auxiliary fuel in such a manner that a reasonably constant steam pressure may be continuously maintained regardless of any reasonable change in the demand for steam.

Some time ago, the author was very fortunate in visiting a large Plant having one of its boiler houses equipped for both gas and pulverized coal, at a time when a sudden emergency made it necessary to take a blast furnace out of production without warning. The boilers in this house were automatically switched from blast furnace gas to pulverized fuel, (probably within 30 seconds of the failure of the supply of gas), the steam pressure in the Plant was maintained and no interruption or inconvenience in power supply was experienced in any department whatever. This incident afforded a beautiful example of the flexibility of this combination of fuels and control.



Auditorium of Syria Mosque, Pittsburgh, Pa., Where Iron and Steel Exposition will be Held

INDEX TO ADVERTISERS

A

Alliance Machine Company 128
Allis Chalmers Mfg. Company 113
American Heat Economy Bureau 135
Automatic Reclosing Circuit Breaker Co. 143

B

Baker Raulang Company 129
Bartlett Hayward Company 139
Benjamin Electric Manufacturing Co. 145
Bussmann Manufacturing Company 137

C

Chicago Fuse Manufacturing Co. 106
Clark Controller Company 133
Cleveland Crane & Engineering Co. 150
Condit Electrical Mfg. Corp. 115
Crouse Hinds Company 141
Cutler Hammer Manufacturing Co. 107
The Cutter Company 112–Cover 3

D

De Laval Steam Turbine Company 120–123
Delta Star Electric Company 119
Doubleday Hill Electric Company 122
Duquesne Light Company 142

E

Economy Fuse & Manufacturing Co. 118
Electric Controller & Mfg. Co. 111
Electric Service Supplies Co. 136

F

Fafnir Bearing Company 131
Farrel Foundry & Machine Co. 148
Fawcus Machine Company 122

G

General Electric Company ..... Cover 4

H

Harnischfeger Corporation 130
Hyatt Roller Bearing Company 146

I

Iron City Electric Company 121

J

Johns Manville, Inc. 134

K

Keystone Lubricating Company 147
Kuhlman Electric Company 144

L

Ladd Water Tube Boiler Company 132
Le Carbone Brush Company 116

M

Martindale Electric Company 124
Moloney Electric Company 120
Morgan Construction Company 126
Morgan Engineering Company 104
Morganite Brush Company 121

N

National Carbon Company, Inc. 105
Nichols Lintern Company 152
Norma Hoffmann Bearings Corp. 117
R. D. Nuttall Company 108

O

Ohio Electric & Controller Co. 151

P

Pittsburgh Transformer Co. 124

R

Reliance Electric & Engineering Co. 114
Roller Smith Company 126
Rollway Bearing Company, Inc. ..... Front Cover
Rumsey Electric Company 128

S

Shepard Electric Crane & Hoist Co. 138
SKF Industries, Inc. 109
Smith & Serrell 125
Stackpole Carbon Company 110
Standard Underground Cable Co. 123

T

Thompson Electric Co. 127
Timken Roller Bearing Company 140
Tool Steel Gear & Pinion Co. 129
Trumbull Electric Mfg. Co. 119

U

United States Graphite Company 125

V

V. V. Fittings Company 149

W

Westinghouse Electric & Mfg. Co. ..... Cover 2-102-103
Weston Electrical Instrument Co. 127
Edwin L. Wiegand Company 101

General Specifications for Electric Overhead Traveling Cranes—Heavy Duty Steel Mill Service

As Recommended
By A. I. & S. E. E. Crane Standardization Committee

1. Title.

These specifications shall be known as the "Association of Iron and Steel Electrical Engineers Specifications" and if included in a contract as such, shall form a part of that contract, whether attached to it or not.

2. Scope and Application.

It is intended these specifications shall apply to heavy duty steel mill cranes, and as far as practical to cranes for special service such as stripping ingots, charging ingots into and drawing them out of soaking pits, ore handling, charging open hearth furnaces, etc. It is not intended they shall take precedence entirely over specifications for special cranes or over ordinary or light duty cranes for general purposes.

3. Proposals.

When inviting proposals, purchaser shall submit supplementary specifications containing principal dimensions, capacity, electric current available, and any unusual requirements.

Builder shall submit with proposal full description covering the design and construction of the crane.

4. Drawings and Specifications.

On acceptance of proposal, two copies of specifications shall be furnished to the purchaser and on completion of the crane two sets of working drawings shall be supplied. Such specifications and drawings shall be treated by the purchaser as confidential information and shall be used only for the purpose of insuring the fulfillment of the contract or as a guide in maintaining the crane in proper condition.

5. Superintendence and Acceptance.

If stipulated in the specifications, builder shall furnish superintendence for erecting and operating the crane for a fixed period to demonstrate that it complies with all requirements. Compliance with the specifications shall be determined by inspection after delivery and proper tests made under maximum working load.

6. Material, Workmanship and Inspection.

Material and workmanship shall be of best quality and shall be subject to the inspection by the purchaser at any time. On request builder shall furnish purchaser or his representative full information concerning the material entering into the construction.

7. Strength of Material.

(a) Proper provision shall be made for all parts subject to impact and rough usage. Journals and shafts shall be of sufficient size to bring bearing pressures and deflections within safe and practicable limits.

(b) Fibre stress in cast iron shall in no case exceed 2,000 pounds in tension, or 8,000 pounds in compression. Fibre stress in cast steel shall in no case exceed 8,000 pounds in tension or 10,000 pounds in compression.

(c) Wrought iron and structural steel as regards physical properties, shall conform with "The Manufacturer's Standard Specifications."

8. Kind and Quality of Material.

(a) All castings shall be of steel unless otherwise specified, except brake shoes and drums, which may be of cast iron.

(b) If purchaser desires a special type of collector shoes he shall supply builder with drawings of same.

(c) All castings shall be of best material, free from blowholes or other injurious defects.

9. Factor of Safety at Rated Capacity.

(a) Load hook not less than 10.
(b) Hoist shafting and all gears not less than 6.
(c) All other parts not less than 5.

10. Accessibility.

(a) All parts which may require occasional removal or replacement shall be readily accessible.

(b) All lubricating devices shall be conveniently located.

11. Interchangeability.

As far as practical, corresponding parts of a crane shall be alike and interchangeable.

12. Gears and Covers.

(a) All gears and pinions shall be cut to diametrical pitch, Brown and Sharpe standard involute teeth.

(b) All pinions shall be made of open hearth steel unless otherwise specified.

(c) No split gears shall be allowed.

(d) Overhung gears shall be used only with purchaser's approval.

(e) All gears shall be protected by gear covers arranged so that top part can be removed for inspection and repairs without disturbing lower part.

(f) The builder shall use the motor manufacturers' standard gear ratios.

13. Shafting.

(a) All shafting shall be increased at least ⅛-inch in diameter for the hub fits of gears, pinions, track wheels or drums, except when these are located at the end of the shaft.

(b) All shafting 6 inches or less in diameter not having increased diameter for hub bearings may be cold rolled or drawn. All shafting having increased diameters for hub bearings, and all shafting above 6 inches in diameter, shall be forged and turned to size.

(c) The minimum diameter of bridge line shafting shall be 3⅜ inches. Starting with 3½ inches, the standard diameters shall run in even ¼-inch sizes.

(d) End sections of bridge drive shall be 4 feet long and interchangeable.

(e) Middle section shall be 8 feet long.

14. Press Fits.

All parts subject to torsion are to be pressed or shrunk on to the shaft and keyed in place.

15. Brackets.

(a) Bearing brackets, if not cast integral with frame, must be kept in alignment by male and female joints or other equally effective method. Holding bolts shall not be depended on for this purpose.

(b) Duplicate brackets shall have holding bolt holes drilled to template so as to be interchangeable.

(c) Tie brackets, made in a single piece, shall be provided to tie all driving and driven shafts, and shall be located as close as possible to pinion and gear.

(d) Where brackets or other supporting parts requiring accurate alignment, are attached to structural material, unless such structural material is of sufficient thickness to allow for finishing, heavy planing strips shall be riveted to structure; these strips and parts that are attached to them must be assembled with their contact faces machined.

16. Bearings.

(a) All track wheels unless otherwise specified shall be provided with type of bearings known as Master Car Builders or "M. C. B." type. The bearing linings shall be flanged at each end. Construction of bearings shall be such as to permit "lining up" to compensate for wear.

(b) All bearings except on motors, sheaves and track wheel pins, shall be fitted with caps, finished male and female. They shall be accurately bored and lined with split bushings having flanges on each end to hold them in place, and proper provision shall be made to keep the bushings from turning.

(c) Bottom half of bearing lining shall be so designed as to permit of removal and replacement without removing shaft.

17. Lubrication.

Grease cups shall be provided for all bearings except those for wheels or motors. They shall have standard pipe threads and as far as possible, be located at points accessible from foot walks. Type of grease cups to be specified by purchaser if there is a preference.

18. Shaft Couplings.

(a) The standard A. I. & S. E. E. coupling shall be so designed that the same coupling can be used on all sizes of line shafting from 3⅜ inches to 4½ inches diameter inclusive.

(b) It shall have a straight face, a 10-inch bolt circle and six 1-inch holes for body bound bolts.

(c) This coupling for safety reasons must be covered by a guard.

19. Bolts, Nuts and Rivets.

(a) Bolts not otherwise specified, shall be rough machine bolts, U. S. Standard threads, with cold punched hexagon nuts.

(b) Bolts shall be provided with lock nuts. Inaccessible bolt heads shall be held in some way to prevent bolts from turning.

(c) Studs or cap screws are not to be used.

(d) Bolts are to be so located if possible as not to require the use of socket wrench or other special wrench.

(e) In fabricating and assembling structural work such as gusset plates, brackets supporting foot-walks and bridge line shaft, angles supporting operator's cab, and all other parts rivets shall be used instead of bolts wherever practicable.

20. Stairs and Ladders.

(a) Stairs shall be provided in preference to ladders. Stair treads shall be of material designed to prevent slipping, and shall not be less than 18 inches in length. Where stairs are not constructed with risers, a plate shield shall be attached to the under side, extending the entire length.

(b) Where ladders must be provided they shall be of steel and constructed with square rungs to prevent turning. The rails shall extend 42 inches above landing place at top, for safety in getting on or off the ladder.

(c) Where the slope of stairs exceeds an angle of 55 degrees from the horizontal, ladders shall be used in preference to stairs.

21. Footwalks.

(a) Unless otherwise specified steel footwalks with rough tread, not less than ¼-inch thick and 24 inches wide shall be provided on outside of both girders, extending to web of the girders and full length of crane and where practical over end carriages and cab making it continuous around top of crane. Where only one such footwalk is installed on the crane, it shall be on the side carrying the bridge motor. When motor is not located entirely below floor of walk, the walk shall be widened at the motor to give a clearance of not less than 15 inches between railing and motor. Where motor is located partly or entirely below footwalk it must be surrounded by a plate corresponding to the footwalk.

(b) When practicable, a footwalk with railing of same material and same general construction as walks and railings on bridge girders, or just a railing, shall be provided across ends of trolley.

22. Railings.

All railings shall be made of structural steel; shall be of standard construction, not less than 42 inches high, with toe boards not less than 4 inches high with intermediate member 21 inches high.

Railings shall be provided on girder footwalks and ends of bridge, landing on cab, and on stairs leading to bridge girder from landing on cab.

23. Box for Supplies.

A steel box for storing oil, grease and waste, made of steel plate and provided with hinged lid, shall be fastened to girder side of footwalk.

24. Bridge End Carriages.

(a) Carriages shall be made either of cast or structural steel.

(b) They shall, where practicable, have bearings on both sides of driving pinions cast integral with carriage. Flanges shall be on outside to afford easy access for bolting or riveting.

(c) Heavy lugs shall extend across the bottom of each carriage near each track wheel and one-inch above the rail to prevent excessive drop of crane in case of breakage of track wheel pin or carriage.

(d) No part of carriage or track wheel gears shall project below the flange of track wheels.

(e) Pads shall be provided for use of jacks or wedges when changing track wheels. Carriage and track wheels shall be so designed as to permit of changing the wheels by raising the carriage just enough to free the bearings.

(f) Bumpers shall be provided on each end of the carriages for protection of crane in case of collision or one crane being required to push another. Location and type of bumpers to be specified by purchaser.

(g) Where necessary, steps or ladders must be provided to give access to compensating trucks from track girders.

(h) Guards which will shove forward or off the track any object placed across it, like a person's foot or arm, shall be attached to each end of the carriages.

25. Track Wheels.

(a) Track wheels shall preferably be of rolled or forged steel. Cast steel wheels may be used if specified.

(b) The standard tread diameter of bridge track wheels shall be 18-inch, 24-inch, 27-inch and 30-inch, and tread shall be made to suit a standard rail not smaller than 85 pounds section. Treads for heavier rails to be made to suit.

(c) The standard bores of these wheels shall be as follows:

18-inch diameter	4⅝-inch bore
24-inch diameter	5⅝-inch bore
27-inch diameter	6⅝-inch bore
30-inch diameter	7⅝-inch bore

(d) A standard increase in diameter of ⅛-inch for all bridge track wheel axles in the wheel hubs is recommended.

(e) All bridge track wheels on same crane to be interchangeable.

(f) The A. I. & S. E. E. standard for bridge runway rails shall be an 85-pound open hearth rail for ordinary cranes, and for special cranes requiring over an 85-pound rail, purchaser shall specify type and size of rail.

(g) The standard tread diameters of trolley track wheels shall be 12, 15, 18, 21 and 24 inches.

(h) The standard bores of these wheels shall be as follows:

12-inch diameter	3⅛-inch bore
15-inch diameter	3⅝-inch bore
18-inch diameter	4⅝-inch bore
21-inch diameter	5⅛-inch bore
24-inch diameter	5⅝-inch bore

(i) With maximum load on crane track wheel bearing pressures must not exceed 750 pounds per square inch projected area.

26. Bridge Girders.

Top and bottom cover plates and angles of box section girders shall be in one piece throughout the girder length, but splicing of approved design will be allowed in web plates. Web plates shall be not less than 5/16-inch thick. The top cover plate of box girders carrying rails, shall be supported at frequent intervals by structural steel distance pieces which shall bear against it and be riveted to both web plates. Girders shall be rigidly fastened to end trucks and shall be tied together at top and bottom by plates which shall be as broad as possible without interfering with the trolley travel. To further assist in keeping crane "square" and stiff, a heavy angle shall be riveted across top of girders at extreme ends, and the entire end covered by a plate riveted to this angle, to angles on end of all web plates, and riveted or bolted to end carriages. Box girders shall be drained to prevent accumulation of oil and water, holes to be not less than ¾-inch diameter.

27. Rails for Trolley.

Rails for trolley cross travel shall be of only open hearth steel. Joints shall be made by means of standard splice bars, and provision shall be made to prevent creeping of rails on girders. Rails shall be fastened in place by steel clamps and through bolts spaced not more than 36 inches on centers, and those on one side shall have a lead of about three inches over those on the other side.

The standard trolley rails shall be 60 and 85 pound sections.

28. Bridge Drive.

The line shaft pinion shall drive directly into the track wheel gears.

29. Operator's Cab.

(a) Cab shall be made of structural steel and be of fireproof construction. It shall be of weatherproof construction if crane is to be operated on outdoor runways. It shall be made substantial and rigid by proper gusset plates and bracing, but such bracing shall not interfere with access to cab or vision of the operator. Particular attention to be given these features in case cab is located at center of bridge.

(b) Such slope as the roof may have shall be toward the rear of the cab. Floor shall be extended to form a landing platform outside the door, which platform shall be equipped with standard railing.

(c) A suitable warning signal appliance shall be provided.

30. Trolley.

(a) Side frames of trolley shall be of cast or structural steel. The requirements for bridge end carriages shall apply as far as possible to side frames. Frames shall be connected with structural steel cross girts. Drum bearings and supports for sheaves shall be located so as to equalize the load on track wheels as nearly as possible.

(b) Wheel fenders as described in specifications for bridge end carriages shall be attached to the trolley frame at each end of each side frame.

(c) Trolley to have floor plate under motors, shafts, drums, etc., forming a working platform with provision made for reaching footwalk on either side of frame.

31. Drums.

(a) Drums shall be keyed to their shafts on driving gear end. They shall have turned grooves of depth equal to one-half the diameter of the rope, and pitch at least ⅛-inch greater than this diameter. They shall be designed so as to leave not less than

two complete wraps of the rope on drum when hook is in the lowest position. They shall have flanged ends of depth and thickness as required for size of cable.

(b) Pitch diameter of drums shall be not less than 30 times diameter of hoisting rope.

(c) Where a drum for lifting magnet cable is specified it must be so located that cable will not interfere with hoist ropes. Weather protection shall be provided for magnet cable drum on cranes for outdoor service.

(d) The crane builders shall use the motor manufacturers standard gear ratios.

32. Brakes.

(a) Unless otherwise specified, and where direct current is used, lowering shall be by electro-dynamic control with one magnetic brake on armature shaft of hoist motor.

(b) Magnetic brakes shall be capable of retarding the full load at double speed and holding same when stopped, unaided by other brakes.

(c) Brake wheels shall be accurately balanced.

(d) Brake coils shall be so designed that the temperature rise shall not exceed that of motor and shall be protected by metal casing.

(e) Brakes for same size motor shall be alike and interchangeable.

(f) Mechanical retaining brakes, if specified shall be of sufficient capacity to absolutely prevent load from descending unless motor is revolved by power in the lowering direction.

(g) Foot brake shall be provided for bridge movement, capable to stop crane under any load condition with 100 pounds pressure on foot lever in a distance not exceeding 10 per cent of the speed in feet per minute at which the crane is traveling when the brake is applied.

(h) Means shall be provided to prevent any parts of brake from falling to the ground in case they become detached or broken.

33. Sanders.

Track sanders operated from the cab by the crane operator, shall be provided for sanding the runway rails when the rails are too slippery at any time for operating.

34. Ropes.

(a) Ropes shall be suitable for the service they are employed for.

(b) Where double ropes are provided for safety or for double drive, each rope shall have the same capacity that would be required if only one rope was provided.

35. Sheaves and Blocks.

(a) Sheaves shall be bronze bushed and have finished grooves not less than 1½ times the diameter of the rope.

(b) Sheaves shall have a pitch diameter not less than 30 times the diameter of the rope and shall be protected by guards which fit close to the flanges so as to prevent rope coming off.

(c) Bottom block shall be of structural steel and plates, and hook shall swivel on ball bearings so constructed as to exclude dirt. All parts of block shall be so arranged as to be readily lubricated, grease cups being so located as to be protected from injury as far as practical.

(d) All sheaves to have guards, to keep rope in grooves.

36. Conductors.

Conductors across the bridge shall be of rigid type.

37. Motors and Controllers.

Purchaser shall specify make, type and sizes of motors and controllers to be used.

38. Wiring.

(a) Purchaser shall submit detail wiring specifications or install his own wiring.

(b) An enclosed double pole safety switch shall be mounted on the foot walk adjacent to the cab and be so connected, that it will disconnect the main circuit between the collectors and the switchboard.

39. Switchboard.

A protective switchboard panel shall be provided. Location and type to be specified by the purchaser.

40. Limits.

Overtravel limits shall be provided. They shall open main motor circuit at any predetermined point, and where limited space for travel may require it, dynamic braking shall be applied to prevent drifting of load.

41. Painting.

All structural work and parts usually painted shall be thoroughly cleaned and painted with two coats of paint. Parts that are inaccessible after they are assembled shall be cleaned and painted before assembling.

42. Safety Devices.

In addition to the safety appliances specified in these General Specifications the builder shall supply and install all appliances necessary for compliance with the Factory Laws of the State in which the crane is to be operated.

APPENDIX A

Hot Metal Cranes

1. For cranes handling hot metal the following additional specifications shall apply:

2. Operator's Cab.

(a) Operators' Cabs shall be so constructed as to enable the operator to completely enclose himself by means of doors and windows.

(b) When crane is handling molten metal and no provision is made for the quick escape of operator, by runway or other means, in case molten metal gets spilled, there shall be provided a compartment for operator to get into that will resist unbearable heat for at least 10 minutes. The door to such compartment shall be at least 18 inches wide and it must be so attached that it can be tightly closed.

(c) Cab that will be subject to heat from below, shall have a shield plate not less than 3/16 inches thick, six inches below floor of cab. It shall be attached with bolts having spacing sleeves on them.

3. Trolley.

On cranes for handling molten metal, where the main hoist drums carrying two sets of ropes are driven by two motors, each through its own train

of gears, each motor and set of gears must be capable of handling the full load independently of the other.

4. Brakes.

(a) Each main hoist on a hot metal crane shall be equipped with two magnetically operated brakes, one mounted on end of armature shaft, the other on intermediate shaft as near the drum as is practicable.

(b) Each brake shall be capable of stopping the full load, lowered at twice the hoisting speed, and holding the load when stopped unassisted by other brakes.

(c) Each brake to comply with paragraph 32 General Specifications as to construction.

5. Ladle Hooks.

(a) Ladle hooks for hot metal ladle shall be either built up of laminated plates or made of heat treated forgings.

(b) Ladle hooks shall be provided with wearing slippers of suitable material (if specified).

(c) Locks to hold the ladle in vertical position shall be attached to the hooks so that they can be seen from the operator's cab. Means shall be provided for holding the lock out when tipping the ladle.

6. Separators.

Separators for hot metal ladle hooks shall be of structural steel, and shall be protected from heat by plate guard, separated from beam by spacing sleeves.

A. I. & S. E. Recommendations

Adopted Monday, June 7th, 1926, at 22nd Annual Convention, held in Chicago, Ill., June 7th to 11th, 1926

Covering

*Rules for the Safe Operation of Electric Overhead Traveling Cranes**

RULES FOR CRANE OPERATORS

(1) The operator should be examined by a Foreman or someone designated in order that his familiarity with crane parts and their uses, as well as his ability to safely operate the crane may be determined in practice and certified to by the examiner.

(2) The operator shall enter or leave his crane at the designated places, making use of the steps or ladder provided at those locations and having both hands free. All materials too large to be carried in pockets shall be raised and lowered by means of a hand line. The hand line must not be attached to the person of the operator.

(3) No one but the craneman shall be allowed in the cage except for repairs, inspection, or instruction of new men or for safety of men working on the crane runway.

(4) The operator shall keep his crane clean and free from all loose boards, tools, bolts, or other objects which may fall on men below or may cause tripping and falling of repairmen when working on the crane.

(5) The operator should inspect his crane at the beginning of the turn or at least once each shift and report at once, any mechanical or electrical defects. especially noting the condition of cables, limit switches, signal gongs and collector shoes.

(6) The operator shall be responsible for the proper oiling and greasing of his crane and he should report any defects in the oiling system on any part of the crane.

(7) The operator, when about to handle material with his crane, shall devote his entire attention to his work and shall pay careful attention to the following points:

(A) Is the hitch of proper length and is it safe?

(B) Is the signal given by the proper party and does the operator understand the signal? If in doubt he must not operate .

(C) Can the load be carried without passing over the heads of men?

(D) Will load clear all obstacles?

(E) Test brakes by means of a short lift and return of controllers to "off" position.

(F) Allow no one to ride the hook or load.

(G) If craneman discovers men on crane runway, he should stop his crane until proper protection is provided.

(8) The operator shall avoid bumping other cranes on the runway, but if he is ordered to do so, he must move the crane slowly with regard to the safety of men working on or below the idle crane.

(9) The operator must not make side pulls unless ordered to do so by a Foreman.

(10) The operator must be sure that his controllers are in the (off) position and switch opened before leaving the crane, and in case of failure of power the controllers must be immediately set in the "Off" position.

(11) In case a controller sticks the operator must pull the main switch at once.

(12) While repairs are being made to the crane, the operator must stay on the job and help with repairs. If ordered to remain in the cage, he must not operate any motion unless he is told that every one is safe.

(13) When the operator is inspecting, repairing, or lubricating his crane, the main switch must be locked in the "off" position.

(14) In case of a fire on the crane, the operator must use the fire extinguisher provided and must notify the Foreman, who shall see that the extinguisher is refilled promptly.

(15) An operator must not operate his crane if he is not physically fit to do so. He should report to his Foreman at once.

(16) The operator must signify his understanding of these rules and must realize that they are intended to help him safeguard the lives of his fellowmen.

RULES FOR FLOORMEN

(1) Floormen when signaling to the crane operator must use the approved crane signals and above all, they must be sure that they do not confuse the operator.

(2) Floormen must be responsible for all slings, chains and hooks and for their proper use in order to make safe hitches, bearing in mind the capacity of the slings and of the crane.

(3) Floormen shall be sure that the crane trolley is centered over the lift in order to prevent swinging of the load.

(4) Floormen must adjust the slings and chains so that they will not strike men on the ground when the crane is moving without a load.

(5) Floormen shall not ride the hook or load or permit others to do so.

(6) An extra man should be in the crane cage to warn the operator when men are working on the crane runway except where approved track torpedoes are used.

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The Following Rules are Suggested for Guidance in Operation of Engine Stops

(Recommendations offered by the Safety Committee of AI&SEE in the year 1923)

1. All parts of an automatic engine stop equipment must be closely watched by attendants, and kept in perfect condition all the time.

2. Engines that are supplied with automatic stops must be shut down by using the stops at least once each day, which means once each turn, if the engine is operated intermittently.

3. Engines that are run continuously for a long period of time must always be shut down when a stop is made, by bringing the quick closing valve into operation.

4. In addition to using the automatic stop when shutting down an engine, the apparatus must be tested once each day or turn to see if it is in perfect working condition.

5. Periodically, as conditions or convenience will permit, each engine stop must be tested by overspeeding the engine.

6. When an automatic stop operates unexpectedly and apparently the apparatus is in perfect condition, trouble should first be looked for in the control governor, and a test should be made by overspeeding the engine.

7. When a control governor is found to be out of order, immediate steps must be taken to put it in good order.

8. Where a trip is brought into action by a pin, projected by centrifugal force, the pin should be inspected, cleaned and oiled periodically as conditions will permit.

9. All parts of the valve and tripping devices, subject to wear and interference by foreign matter sticking to parts, must be kept constantly clean and lubricated. Cylinder lubricant must be admitted ahead of the automatic closing valve.

10. In the case of lubricating valves on steam turbines, if there may be any objection to admitting lubricant on buckets it must be admitted directly on the valve parts, in quantity just sufficient to effect perfect and continuous lubrication.

All persons charged with the responsibility or operation should be acquainted with the list of causes for explosions, possible combinations and improper methods which are as follows:

Fly-wheel accidents are caused by overload or overspeed. Overload suddenly released will cause a fly-wheel to race. Overload may be produced by:

1. Clogging of the machinery in the mill or factory.
2. Unusual imposition of separate loads at the same time.
3. Careless or ignorant handling of friction clutches.
4. If the engine drives electrical machinery an overload may be produced by a short circuit, the sudden releasing of which causes the damage.
5. Sudden stopping of the engine due to obstruction or defects.

Overspeed causes the fly-wheel to explode by centrifugal force. By "overspeed" is meant the accidental increase in speed over that at which the fly-wheel will safely revolve, commonly called racing. Racing may be produced by:

1. Governor being improperly designed.
2. Slipping or breaking of governor belt.
3. Breaking of governor pulley.
4. Derangement of governor by internal or external causes, as when steam sticks or a rod breaks.
5. Derangement in valve gear.
6. Sudden reduction of load as when the main drive belt or clutch breaks or an armature burns out, etc.

Besides these principal causes there are contributing causes such as:

1. Failure of some part of an engine, as when its bed breaks or its shaft fails.
2. An idle pulley or driving pulley may break and hurl its fragments into the governor or valve gear.
3. Defects in design or material of the fly-wheel.

When a condensing engine overspeeds, even after the steam has been shut off, unless the vacuum is broken, racing may continue until the fly-wheel explodes.

When an engine starts to race, machines that it drives are shut down by the operators. The decrease in load causes a further increase in speed, which causes the fly-wheel to burst by centrifugal force.

For automatic engine stops the following combinations are possible:

1. Independent governors may be either:
   a. Electrically actuated.
   b. Steam actuated; or
   c. Mechanically actuated.
2. Combined trip and throttle valve.
   a. With magnet for closed circuit electrical operation.
   b. With solenoid for open circuit electrical operation.
   c. For closed circuit storage battery.
   d. For open circuit dry battery.
   e. To be steam actuated.
   f. Steam actuated and also fitted for open circuit electric operation.
   g. Steam actuated and also fitted with storage battery for open circuit electric operation.
   h. For mechanical operation.
3. Butterfly valve.
   a. With magnet for closed circuit electrical operation.
   b. With solenoid for open circuit electrical operation.
   c. With magnet for closed circuit storage battery.
   d. With magnet for open circuit dry battery.

The following methods and combinations for stopping an engine, should not be classified with automatic stops for quick closing.

1. A throttle valve attached through gearing to a motor or any mechanical appliance, for closing the throttle.
2. A mechanical device that is auxiliary to and connected to the control governor.

General Specifications of A.C. Motors For Main Roll Drive

PREFACE

These specifications covering main roll drive motors are the results of two years' discussion on the subject of Standardization of Rating of Large Rolling Mill Motors. They represent the consensus of opinion of not only the large majority of users, but also of the designers of such motors. It is felt that both the buyers and the manufacturers of main roll drive motors will be benefited in using these specifications when mills are to be electrified.

It should be noted that, according to paragraph one, "that the intent of this specification is not in any way to limit or hamper the designing engineers in their efforts to improve the electrical or mechanical characteristics of the machines under consideration," but on the other hand to encourage all possible improvements in design, workmanship and material.

Since the consumer ultimately pays the bill, it is suggested that where possible preliminary propositions be requested from the manufacturers as approximate estimates rather than as complete proposals. Approximate figures will usually serve all purposes for estimates, cost less to prepare and will be easier to obtain. However, when the job has reached the purchasing stage, complete proposals in full in accordance with the A. I. & S. E. E. specifications should be requested.

Referring to paragraph 10 of the specification which covers tests and acceptance it is suggested by the committee that purchasers request certified copies of tests necessary to check guarantees rather than witness tests on the particular machine in question. This is particularly true of all standard machines where the past performance of similar machines is well known. Paragraph 13 states that the guarantees shall be given on the Single Rating Basis. The temperature rise with full load continuously applied shall be 50 deg. C. above an ambient temperature of 40 deg. C.

The greatest advantage of this rating is the fact that all questions of overload capacity of these motors are eliminated. Where overload capacity is wanted it shall be included in the rating. For instance, if under the old plan a motor of 1000 hp with 25 per cent continuous overload capacity is wanted, under the Single Rating Plan a 1250-hp motor should be called for. This motor will have ordinarily 250 per cent torque or 3125 equivalent hp, while the old motor would have had torque equivalent to only 2500 hp. The cost of the two motors will be practically the same if not slightly in favor of the higher rated motor. The point cannot be too strongly emphasized, however, that continuous overload capacity must be forgotten. *The rating of the motor must include all overload capacity desired.*

For comparative purposes it is recommended that operators ask the manufacturers to give them the approximate 50 deg. C. rating of their various motors now installed, in order that future installations may be compared to the 50 deg. C. rating rather than to the old 35 or 40 deg. rating. In the matter of power factor and efficiency, the 50 deg. motor is always equal to and in most cases better than the old 35 or 40 deg. motor on any given rolling cycle. This is due to a better balance between fixed and variable losses.

If there is doubt as to the proper size of motor, the bidder should check the rolling schedules and estimate the hp required to drive the mill.

Paragraph 18 specifies that insulation shall not be injured if temporarily exposed to dampness and properly dried out. It should be noted that while this feature is considered necessary in all motors, it should not be taken advantage of in allowing motors to stand any length of time where moisture is present in any great quantities, as the best of insulation can and will be damaged if exposed to water for a great length of time.

Paragraph 21 provides that bearings of 10 in. and over in diameter may be water jacketed. This feature is recommended only as a protecion against serious damage should the bearings fail while in service and should not be considered as a method for obtaining longer life or better service from a given bearing. It is very doubtful if the additional expense is warranted except in cases of unusually heavy rotating parts as is the case where flywheels are carried in the same bearings as the rotor.

The item of oil gauges is considered a very serious detail that should not be overlooked and it is strongly recommended that all glass sight gauges be abandoned and large openings leading directly into the oil cellar be provided. These should be designed with a heavy lid so arranged that dirt cannot easily fall into the oil cellar when the lid is opened and furthermore this lid should fall closed when released.

Paragraph 23 covering Primary Control has been framed to cover the control of main roll drive motors as safely as possible. The forward and reverse switches for each installation should receive very careful consideration and if they are to operate on heavy currents very frequently, air brake switches should be considered as a substitute for the oil immersed contactor or oil switch. The maximum torque push button is so arranged that it eliminates the current limit features of the secondary control and places the input to the motor entirely in the hands of the operator, who can cut out resistance by moving the master controller from step to step until the desired input is obtained. With a slip regulator this is possible by manipulating the slip regulator by hand and blocking in the overload coils on the main primary circuit breaker.

General Specifications of A.C. Motors For Main Roll Drive

1. General

This specification is intended to cover as far as possible the general requirements for main roll motors. Reference copies, which shall be known as the A. I. & S. E. E. Standard Specification, will be furnished electrical manufacturers.

It is distinctly not the intent of this specification in any way to limit or hamper the designing engineer in his effort to improve the electrical or mechanical characteristics of the machines under consideration, but rather to insure the adoption by all manufacturers of such features as have proven practical and desirable; thus placing all proposals on a readily comparable and strictly competitive basis.

It is obviously impossible to cover in a general specification all of the many important details without unduly limiting a permissible latitude of design, consequently, where features are to be "as required," it is understood that said requirements will be covered in a supplementary specification which will accompany the purchaser's formal request for proposals.

2. Proposals

The manufacturer shall submit complete proposal including all specifications, data sheets, wiring diagrams, dimension sheets, etc., necessary to a clear understanding of general construction and special features of all apparatus in said proposal.

Alternative proposals covering motors of different horsepower, flywheel effect, modified control, etc., will be considered provided said alternatives are accompanied by a guarantee to successfully meet the requirements of this specification.

Features not covered by this specification or by the supplementary specification issued by the purchaser will be left to the judgment and experience of the manufacturer.

3. Changes

The purchaser reserves the right to make any change in specifications or general arrangement after the contract is signed. Such changes shall be clearly indicated in writing and submitted to the contractor. Any difference in cost resulting from said changes shall be adjusted to the mutual satisfaction of contractors and purchasers before alterations are begun.

4. Delivery

All equipment shall be delivered f.o.b. cars purchaser's works, unless otherwise specifically agreed upon by contracting parties.

5. Assembly in Field

Motors which, because of shipping limitation, cannot be assembled in the shop before shipment shall be erected at destination by the contractor at his expense, unless otherwise stated.

6. Erection

All equipment required in connection with the installation, including all motors which have been assembled in the factory, shall be erected with all necessary accessories "as required," by contractor or by purchaser, or shall be erected and started under the supervision of contractor's superintendent.

In any case, the contractor shall pay all costs of additions or alterations rendered necessary in the field by his failure to have properly completed such work in the factory before shipment.

Where apparatus is erected or started under supervision of contractor, he shall furnish without additional expense to purchaser for a stated period of time, or on a per diem basis, "as required," a competent man to superintend the installation of all equipment covered by the proposal. Purchaser shall furnish all necessary common labor, tackle, etc.

Where apparatus is erected and started by contractor, the supplementary specification submitted by purchaser shall clearly define the facilities for handling material at destination, such as railway tracks, cranes, etc. In either case, contractor shall assume full responsibility for the successful placing of the apparatus in operation.

7. Patents

The contractor agrees to pay all royalties incurred in the manufacture or application of equipment covered by his proposal and further agrees to assume the defense of any suit and all suits for infringement of a patent or patents which may be brought against the purchaser by reason of the use of any device furnished by the contractor, and to indemnify said purchaser for all damage or costs which may result from a decree or injunction against purchaser in said suit or suits.

8. Drawings

The contractor shall without undue delay furnish the purchaser with diagrams of all electrical connections and certified prints showing general dimensions necessary to enable purchaser to make layout for installation of all equipment covered by contract.

Contractor shall also check and submit constructive criticism of purchaser's general layout "if required."

9. Guarantee (see also Paragraph 13, Rating)

The contractor shall guarantee to successfully perform the work as outlined and requested in this specification, and to pay all costs of removing, supplying and reinstalling any part or parts which may fail through defective design, material or workmanship within one year after receipt by purchaser.

10. Test and Acceptance

Motors which cannot be assembled at factory (paragraph 5) shall be tested at destination after erection, provided necessary facilities are available. All others shall be tested before shipment. The contractor shall furnish the purchaser, "as required," with certified copies of all tests necessary to check guarantees, and shall make these tests in the presence of purchaser's representative "as required."

Temperature, insulation and efficiency tests shall be made in accordance with the standardization rules of the A. I. E. E. governing the testing of machines of this class. The separate loss method shall be used. In determining all efficiencies, all losses inci-

dent to the operation of the machine such as rheostats, auxiliary transforming or speed regulating devices, etc., shall be included.

If equipment fails to meet the requirements of this specification, and if the contractor fails to begin within ten days from receipt of written notice of defects, to make diligent effort to overcome such defects, the purchaser reserves the right to make the equipment comply with the specifications at the expense of the contractor.

11. Workmanship, Material and Inspection

Workmanship and material shall be first-class in every respect and shall be subject to the inspection and approval of purchaser's representative "as required."

12. Accessibility and Interchangeability

All parts requiring renewal shall be readily accessible. All like parts of duplicate apparatus furnished on one contract shall be interchangeable and similar parts shall as far as practicable comply with above requirements so as to reduce the number of different sizes to a minimum.

13. Rating

Motors shall be designed and temperature guarantees given on the Single Rating basis as covered by the Standardization Rules of the A. I. E. E. (paragraphs 261-3, 1918) unless otherwise specified. The rating shall be the continuous capacity with the temperature rise not exceeding the temperature limits prescribed in paragraphs 375-392 (A. I. E. E. Standard Rules ,1918) inclusive, namely 50 deg. C. rise by thermometer in an ambient temperature of 40 deg. C. Efficiency power factor and torque guarantees shall be based on this rating.

Where "required," bidder shall check size from load curves furnished with supplementary specification, and should his results differ from "required" size, he may submit an alternative proposition on a motor of capacity which he guarantees to successfully perform the work as shown on load curves. This motor shall otherwise meet the requirements of this specification. Whenever auxiliary devices, such as motors, generators, transformers and the like are required as an essential part of the main roll drive, they shall in each case be designed on an equally conservative basis as the main motor.

14. Type

The main roll motors shall be of the induction type with distributed windings in both stator and rotor. The stationary member or stator will be the primary, and the rotating member or rotor will be the secondary. External starting resistance shall be used.

15. Stator

The sheet iron punchings which form the magnetic circuit shall conform to the best practice. The method of securing these punchings in the stator frame shall be fully described. The frames shall be provided with ventilating openings so as to allow free circulation of air through and around the ends of the windings, "as required."

Open slot construction shall be used.

The windings shall be thoroughly insulated throughout their entire length and moulded to proper size before being assembled in the slots. They shall be held firmly in place by means of wedges driven into grooves in the teeth, and substantially braced at the ends to minimize danger of damage from vibration. Each coil shall be a complete unit in itself so that in the event of any coil being injured, it can be readily removed and another substituted.

On pedestal bearing type machines means shall be provided for moving the stator vertically and horizontally at right angles to the shaft, and also parallel to the shaft for adjusting the air gap or for repairs.

16. Rotor

The sheet iron punchings of the magnetic circuit shall conform to the best practice.

The windings shall be thoroughly insulated throughout their length and moulded to proper size before being assembled in the slots. They shall be wedged tightly under the overhanging parts of the teeth, which shall be so shaped as to prevent the windings being displaced by centrifugal force. The ends of the windings outside the slots shall be firmly bound to the end flanges as a further protection against displacement. The method of securing the punchings to the rotor spider shall be clearly described.

The slots and windings shall be so arranged that in the event of any coil being injured, it can be readily removed and another substituted.

17. Collector Rings

The collector rings shall be carefully insulated from each other and from the shaft and shall be readily removable.

The brushes and collector rings shall be of ample size to prevent injurious heating.

18. Insulation

All dead metal parts of machine, switchboards, control panels, resistors, switches, etc., shall be thoroughly grounded and insulation figured accordingly.

The insulation between windings and core shall be subjected to a high potential test in accordance with the Standardization Rules of the A. I. E. E. unless otherwise specified. Where insulation is necessary between bearing pedestal and base, this pedestal shall be plainly marked with name plate inscribed, "Pedestal Insulated."

All insulation shall be of such character that no injury will result from temporary exposure to dampness if properly dried out, as determined by test.

19. Bolts and Nuts

All threads shall be U. S. Standard and all steel nuts hexagon, cold pressed. Cap screws and stud bolts shall not be used where the use of through bolts is practical.

20. Bearing Supports

End shields (or bearing brackets) if used shall be split horizontally. Means shall be provided for adjusting the bearing housings both vertically and horizontally, so as to equalize the clearance of the rotor "as required."

Bearing pedestal shall not be cast integral with the base plate, and shall be bolted and keyed or dowled to the base plate.

21. Bearings

Where two bearings only are used on each motor, they shall be duplicates unless otherwise specified. All bearings shall be provided with oil

rings. When "required" they shall be arranged for taking oil from an oiling system. Means shall be provided to prevent oil creeping out along the shaft.

All bearings shall be lined with the highest quality of bearing metal, and bored to fit shaft, and held from turning by top half. Bottom half of bearing 10 in. and over in diameter may be water-jacketed. All bearings shall be designed for continuous use without water cooling, which is intended only as an additional factor of safety. All bearings shall be arranged for changing by simply relieving them of the weight of the shaft and rotor.

The oil cellar shall be of ample capacity, and suitable provision made to show oil level and for draining off of all the oil.

Where power is transmitted through both ends of shaft, each end shall be provided with a suitable thrust collar or bearing "as required." These bearings or collars shall be duplicates.

Special provision shall be made "as required" for taking care of extreme thrusts due to breaking of spindles.

All wearing parts must be arranged so as to permit of easy replacement and repairs, and provision must be made for their lubrication and the care of waste oil.

No thrust bearings are to be furnished with belt or rope connected motors.

22. Shaft and Couplings, Etc.

Shaft shall be forged steel in one piece of ample size and accurately finished. Half couplings shall be furnished by purchaser, rough bored, and shipped to contractor for key-seating, keying and fitting to the motor shaft.

23. Primary Control

The primary control for each motor shall provide for taking power from the supply mains in succession through suitable disconnecting switches, main oil switch, forward and reverse non-automatic magnetically operated switches, and thence to the primary windings of the motor.

The main oil switch shall be capable of successfully opening on heavy overload or short circuit when set for instantaneous overload operation and connected to a buss or feeder circuit having a normal rated capacity stated in purchaser's supplementary specification, and shall have greater capacity than the above "as required." It shall be automatic, provided with "under-voltage" release attachment, and shall be so interlocked with the remainder of the control that in case it opens automatically it cannot be again closed until the master controller is in the "off" position. Where practicable the main oil switches should be placed in separate cells.

The forward and reverse switches shall be controlled from one or more master controllers or push buttons "as required."

The operating current shall be single phase ac. or dc. "as required."

Where the operation of the forward and reverse switches is of greater frequency than 10 times in 30 minutes, air brake switches shall be used unless otherwise specified.

Slate panels shall be finished "as required" and mounted on angle iron or pipe framework "as required." The following instruments shall be furnished unless otherwise specified:

1 Ammeter	1 Polyphase Watthour Meter
1 Voltmeter	
1 Graphic Polyphase Wattmeter	1 Power Factor Meter
	1 Frequency Meter

No pilot lamps or parts carrying current at over 275 volts shall be mounted on front of panels.

Voltmeter scale shall be calibrated so as to read direct.

Indicating Wattmeter and Ammeter shall be 90 per cent to 100 per cent larger than, and the Watthour Meter approximately the same as the normal rating of the motor.

Potential transformers shall have 110-volt secondaries and current transformers shall have five (5) ampere secondaries at full load.

24. Secondary Control

The secondary control may be made up of the usual contactors and grid resistors or a liquid slip regulator with necessary torque motor, etc., "as required."

Contactors and Grid Resistors

Except as otherwise specified the secondary control apparatus shall be furnished complete in every detail, including all conductors and electrical connections between the various elements of the control panels, but no conductors between panels and resistors nor panels and slip rings.

Purchaser will furnish and install "as required," all concrete or brick structures, control pits, and all wiring and conduit between control apparatus proper and motors, master controllers and emergency stop switches.

a. Current

All control apparatus shall be operated by direct current or alternating current "as required." Failure of control circuit must not cause damage to any part of the apparatus.

If alternating current is "required," it shall be single phase only and contractor shall furnish separate stepdown transformers of proper voltage and also double pole high tension cut-outs for same.

If direct current is "required," apparatus shall be designed for voltage "as required." A double pole fuse and switch shall be furnished to which purchaser will connect supply circuit.

b. Resistance

The grid resistors shall be in fireproof mounting and must be substantial enough to prevent damage from vibration caused by maximum current.

That portion used for regulating shall be capable of carrying 125 per cent full load current continuously with 200 deg. C. rise.

That portion used for accelerating shall be capable of carrying full load continuously for three (3) minutes with 350 deg. C. rise on last step and two (2) minutes with 350 deg. C. rise on the first step, intermediate steps to taper in capacity between first and last steps.

That portion used for plugging only shall be capable of carrying full load current for one (1) minute with 350 deg. C. rise.

Resistors shall be provided with special insulation which shall be subjected to the same potential test as is the rotor.

c. Current Limit Acceleration

This resistance may either be cut out gradually at will of operator, or automatically with current limit which prevents the current during acceleration from exceeding an adjustable predetermined value.

d. Emergency Stopping

Additional resistance shall be included to permit reversal of torque in the main motor while running at full speed forward, for emergency stopping, without exceeding 150 per cent of full load current.

e. Maximum Starting Torque

In emergency the current limit feature may be temporarily put out of commission by means of a so-called maximum torque push button, thus permitting the operator to obtain any value of torque at starting, up to the limits of maximum torque for the particular motor in question.

f. Control Switch

A control switch shall be mounted on the secondary panel which, when opened in emergency, shuts down the entire equipment and renders the master controller ineffective.

One or more push buttons shall be provided to permit shutting down the equipment independently of the master controller. The motor can then be started again only by first returning the master controller to the "off" position.

g. Flywheel Regulation

When flywheels are contemplated, that portion of the resistance used to obtain a series speed characteristic shall be permanently connected to the slip rings or shall be either manually or automatically adjustable "as required." The slip due to this portion of the resistance shall be stated in per cent of synchronous speed with the motor developing its full load torque.

Liquid Slip Regulator

a. General Construction

The slip regulator shall be of substantial construction, so that there will be no distortion when filled with solution and no dangerous vibration when handling maximum current.

It shall be so arranged as to give easy access to all renewable parts and parts that must be cleaned.

It shall be so arranged that all the solution can be drawn from the tank and electrode compartments without removing any part.

The material used for the electrode compartments shall be such as not to be readily breakable and it shall not be affected by the solution used.

The electrode compartments shall be secured to the tank in such a manner as to avoid excessive tension or shear stresses.

The moving electrodes shall be adjustable and all mechanical joints liable to carry currents shall be shunted.

b. Range of Adjustment

The slip regulator shall be so arranged that it can be set to operate at any value from 80 per cent to 150 per cent times the rating of the motor with which it is supplied.

c. Range of Resistance

The slip regulator shall be so designed that the starting current of the motor can be limited to full load current and also if the motor is running at full speed and is suddenly reversed, the current will not exceed 1½ times the full load current. If external resistance is used in conjunction with the slip regulator, proper switching apparatus shall be supplied to limit the current to these values.

The minimum resistance of the slip regulator shall be low so as to approach the effect of short circuited slip rings as closely as possible.

d. No Voltage Trip

The slip regulator shall be so arranged that in case the current supply is interrupted the electrodes will automatically separate to the maximum distance.

e. Regulation

The slip regulator shall be so designed that for a definite setting the current will not exceed the setting by more than 10 per cent.

f. Temperature

The slip regulator shall be so designed that in normal operation the temperature of the solution shall not exceed 75 deg. C. and with cooling water reduced 50 per cent the solution will not boil sufficiently to interfere with operation except by evaporation.

SUPPLEMENTARY INFORMATION FURNISHED BY PURCHASER

Par. 6—Erection

a Equipment to be erected by.....
Equipment to be started by.....
Erection and starting under supervision of .....
Expense, on per diem basis.....included in total price.....

b. Facilities for erection, cranes, railway tracks, etc., to be clearly defined .....

Par. 8—Drawings

Preliminary layout by purchaser to be submitted to contractor for constructive criticism.

Par. 10—Tests

Required— Certified.....
Inspectors.....

Par. 11—Inspection, Approval of Material and Workmanship

Par. 13—Rating (See note at end.)

Hp.....Synchronous Rpm.....
Full load speed..... Voltage.....
Phase..... Frequency.....
Reversible or non-reversible.....
Speed, constant, variable, or adjustable.....
If adjustable, give maximum and minimum rpm. at rated full load torques including flywheel slip in rpm.....

Par. 14—Type of Drive

Direct connected, geared, rope, chain, flywheel how mounted.....

Par. 20—Bearing Supports

Bearing housings (shall) (shall not) be adjustable.

Par. 21—Bearings

Number..... Kind: standard, thrust collar, breakable end thrust..... Lubrication: ring, gravity, forced oiling.....

Par. 22—Shaft Coupling

Rigid flange or flexible coupling furnished by .....

Par. 23—Primary Panel

Capacity in kva of, power system.....
feeder.....oil switch. Location and arrangement of O. S. Finish of panels.....
mounting, angle or pipe framework.....
Number of master controllers for forward and reverse switches.....
Type of control, master or push button.....
Operating current for switches, ac. or dc.....
Voltage .....

Par. 24—Secondary Control

a. Energizing current ac. or dc. voltage.....
b. Grid type resistance.....
Liquid slip regulator.....
c. Slip resistance: % permanent
% hand controlled
% automatically controlled

Note: Supplementing Par. 12. If purchaser is in doubt about proper hp, the following form should be filled out and submitted to contractor:

Kind of mill.....Mill.....high
Product.....in. x .....in. From.....in. x .....in.
Working diameter of rolls.....in.
Tensile strength..... % carbon.....
Rpm..... Max..... Min.....
Weight.....lbs., ingot, bloom, or billet
Initial sect. top.....in. bottom.....in.
Initial length.....in.
Final section.....sq. in.
Tonnage per hour..... Average..... Max.....
Elapsed time between successive billets entering the First pass.....

No. of Pass	Size out: Width by Thickness	Size out: Area sq. in.	Per cent Reduction	Elongation	Length out	Avg. rpm.	Time Seconds	Pass Interval
1								
2								
3								
4								
5								
6								
7								
8								

INFORMATION TO BE FURNISHED BY BIDDER FOR SINGLE AND MULTISPEED MOTORS

1st Name of bidder.....
2nd Number of motors.....
3rd Normal rating hp and torque (in pounds at 1 ft. radius) with slip rings short circuited at all speeds.
†4th Maximum pull out torque at rated speeds in per cent of full load torque.....
Maximum starting torque at rated speeds in per cent of full load torque.....
*5th Efficiency at each rated speed.
1/2 load
3/4 load
4/4 load
*6th Power factor at each rated speed.
1/2 load
3/4 load
4/4 load
*7th Speed regulation—synchronous speed to full load at rated speeds with slip rings short circuited.
*8th Open circuit rotor voltage at standstill for each speed connection.
*9th Full load stator current at each rated speed.
*10th Full load rotor current at each rated speed.
*11th Radial air gap. ( )
*12th Diameter of rotor.
13th Material for spider (rotor).
*14th Outside diameter of frame.
*15th Maximum height above bottom of base.
*16th Center of shaft to bottom of base.
*17th Length of bed plate.
*18th Width of bed plate.
*19th Height of bed plate.
*20th Diameter of bearings.
*21st Length of bearings.
22nd Type of bearing (standard seat, spherical seat, etc.) (plain or water cooled).
*23rd Diameter of shaft in spider.
24th Type of thrust bearing.
*25th Area of single thrust bearing.
*26th Total length of shaft.
*27th Effective weight times radius of gyration squared (wr^2)
*28th Weight of bed plate.
*29th Weight of both pillow blocks and bearings.
*30th Weight of stator.
*31st Weight of rotor less shaft.
*32nd Weight of motor complete.
*33rd Weight of heaviest single piece to be handled during erection.
*34th Weight of external resistance.
35th Number of accelerating points.
36th Number of running speed points.
37th Type of accelerating switches.
38th Type of main primary switches.
39th Type of forward and reverse primary switches.
40th Delivery.
41st Price.

†Starting and pull out torque in ft. pounds.

*In preliminary propositions give approximate outside figures.

Additional information to be furnished by bidder for adjustable speed induction motors with auxiliary speed regulating equipments:

Type: 1st. Sherbius double or single range.
2nd. Kramer double or single range.
3rd. Other.

Maximum rpm. at rated hp.....
Minimum rpm. at rated hp.....
Regulation in rpm. no load to full load:
1st. Maximum speed setting.....
2nd. Minimum speed setting.....

Maximum running torque in pounds at 1 ft. radius at all speeds between and including maximum and minimum rpm. at rated hp.....

Index of Proceedings of the A.I.&S.E.E. and Iron & Steel Engineer From 1907 to 1926

The following 20-year index of the activities of the AI&SEE has been compiled for the purpose of providing for the engineers of the Iron and Steel Industry a ready reference and guide of electrical, mechanical, combustion and safety practices for the past 20 years.

The index is catalogued as follows: 1st. Authors, which represents all of the leading engineers of the Iron and Steel Industry. 2nd. Subjects of Papers which cover practically all engineering in the Iron and Steel Industry. 3rd. Curves, tables, charts and costs, which will be of considerable value to engineers when quick references are necessary.

A careful analysis of this index leads to the conclusion that the AI&SEE has performed a highly specialized engineering service of lasting and inestimable value to the Iron and Steel Industry.

List of Authors

A

Adams, L. F., Continuous Rated or 50 Degree Rise Motors. 1921—21.

Albrecht, G. M., and W. H. Powell, Direct Current Armature Windings for Multi-Polar Generators and Motors —Frogleg Windings. 1925—345.

Albrecht, J. H., The Thomas Flexible Coupling. 1923—205. Breaking Spindles for Main Roll Drive. 1924—634.

Alsacker, Alfred, Outdoor Sub-Station Practice and Use of Carbon Tetrachloride Fuses. 1919—55.

Andresen, A. M., Portable Electric Tools as Applied to the Iron and Steel Industry. 1916—447.

Andrew, Kenneth, and Walter Fixter, Electric Locomotives for Industrial Purposes. 1919—283.

Angel, H. H., Magnetic Control for Steel Mill Auxiliaries. 1926—349.

Applegate, R. R., Pipe Line Arc Welding. 1925—125.

Arthurs, Addison E., Comparative Merit of Renewable Fuses. 1924—193.

B

Bailey, B. G., Electrically Heated Soaking Pits. 1925—111.

Bailey, E. G., Combustion Control. 1924—709. Automatic Combustion Control. 1925—293.

Baker, Ray L., and Joseph McKinley, Central Station Power Supply to Iron and Steel Industry. 1917—339.

Baldwin, Allen T., The Flaming Arc Lamp in the Iron and Steel Industry. 1914—491.

Barlow, Lester P., The Differential Pressure Steam Generating System. 1925—176.

Bauer, R. G., Report of Sub-committee on Illumination. 1922—662.

Batesole, D. E., Mounting and Maintenance of Roller Bearings on Electric Motors. 1924—155.

Batterman, J. J., The Fox-Multax Lamp. 1910—61.

Baum, J. V., Stokers and Their Recent Developments. 1922—163.

Behrend, B. A., Gas Engine Driven Generators. 1907 Paper 18.

Beitman, B. T., Electric Power Distribution in the Steel industry. 1922—793.

Bell, J. T. R., Selection, Installation and Operation of Anti-Friction Bearings. 1924—193.

Bennett, A. M., Arc Welding Systems. 1919—610.

Bennett, C. E., Lightning Arresters. 1920—579.

Blakeslee, D. W., Easy Method for Obtaining the Effective Motor Load from a Graphic Meter Chart. 1924. Steel Works Lighting. 1924. Electric Rolling Mills 1925—508. Merchant Mills. 1926—96. Tube Mills. 1926—147. Electric Rolling Mills. 1926—163. Lighting Costs. 1926—202. Ore Unloaders, Blast Furnaces and Skip Hoists. 1926—503.

Bowman, J. C., Underground Cables and Accessories. 1914—317.

Booth, J. J., and J. A. Morgan, Inspection and Operation of Electrical Apparatus. 1919—369.

Booze, M. C., A Discussion on Refractories for Use in Steel Plants. 1926—284.

Brackett, Q. A., The Theory and Practice of Lightning Protection. 1920—585.

Brading, C. M., and F. A. Wiley, Safety Movement in Steel Mills. 1919—255.

Bradley, Linde, Controllers and Motor Starters. 1909 Paper 6.

Brewer, O., General Phases of Pyrometry and Temperature Control in the Steel Industry. 1924—11.

Brolinson, B. G., The Ljungstrom Air Preheater. 1924—461.

Brunner, H. E., Application of Anti-Friction Bearings. 1924—179.

Buckwalter, T. V., Application of Taper Roller Bearings. 1924—133.

Buel, Jr., William C., The Chapman-Stein Recuperator. 1924—393. Discussion on Fuel Savings Conference. 1924.

Burd, F. J., and H. D. James, Electric Skip Hoists and Bell Hoists. 1917—17.

Burd, F. J., Report of Standardization Sub-committee on Control. 1920—561.

Burke, James F., Synchronous Motor Applications. 1925—159.

Burnham, George A., The Selection and Maintenance of Oil Circuit Breakers. 1925—384.

Burr, W. H., and H. A. Lewis, Automatic Door Hoists for Open Hearth Furnaces. 1918—209.

Burr, Walter, Ore Handling Costs. 1923—747.

Burr, W. H., Foreign Steel Mill Practice. 1925—318.

Butler, R. E., Boiler Practices of 1922. 1922—561.

Butler, Ralph A., Heating of Ingots by Electricity. 1925—374.

C

Cair, Excello Arc Lamps. 1910—59.

Caldwell, Paul, Control of D. C. and A. C. Motors as Applied to Cranes. 1916—229.

Callan, J. C., Centrifugal Compressors. 1908 Paper 13.

Callow, O. C., Power Generation by Blast Furnace Plant. 1925—242.

Candy, A. M., Cutting Steel Mill Maintenance Costs with the Welding Arc. 1925—122.

Candy, A. M., and G. D. Fish, Tests of Arc Welded Structural Steel. 1926—380.

Canney, P. R., A System of Coal and Ore Bridge Traverse Control for Protection Against Wind and Skewage Hazards of Skew Type Direct Current Bridges. 1923—421.

Carrick, G. S., Combustion Control. 1925—294.

Chandler, Jr., W. P., Control of Pressure Gas Producers. 1924—289. Report of Electric Heat Committee for 1926—224.

Cheney, Edward J., and B. R. Shover, Cost and Efficiency of Alternating versus Direct Current Motors for Steel Mill Applications. 1911—90.

Cheney, E. J., Automatic Speed Regulating Equipment for Induction Motors with Flywheels. 1912—115.
Churchward, A., The Plastic Arc System of Welding. 1919—603.
Clark, A. B., The Economical Generation of Electrical Power. 1921—601.
Clewell, C. E., Modern Illumination in the Iron and Steel Industry. 1912—213.
Coey, Stewart C., Application of Auxiliary Apparatus in Iron and Steel Mills. 1914—183. The Relation of Physical Examination to Electrical Work. 1915—319.
Cole, Gurnsey H., Orientation of Steel Rod Mills. 1925—334.
Cone, C. F., Medium Temperature Furnace Installations 1924—747.
Conway, M. J., Additions to Rolling Mills at Steubenville Plant of the Wheeling Steel Corporation. 1926—239. Refractory Problems, By-Product Coke Plant. 1926—292.
Cornwell, B. A., Practical Education of Steel Mill Electricians. 1920—255, Educational Training for Electrical Employees. 1919—378. Motor Operated Centrifugal Pumps in Steel Plants. 1923—309.
Corrin, J. G., Care and Operation of Power Transformers. 1922—23.
Cosdon, H., Standardization of Electrical Apparatus for Cranes and Machine Tools. 1917—663.
Cotton, Alfred, and E. R. Fish, Heine Boiler Practice in 1922. 1922—536.
Cramer, Frank W., and A. A. MacDonald, Reducing Power Bills on Mine Fans with Synchronous Motors. 1922—213. Some Factors Entering into the Selection of Motors for Mine Hoists. 1923—627.
Cramer, Frank W., General Specifications for Electric Overhead Traveling Cranes—Heavy Duty Steel Mill Service. 1921—403. Report of Control Committee. 1922—621. The Automatic Blast Furnace. 1925—229. Features of the New Electrical Installations at the Cambria Plant of the Bethlehem Steel Co. 1926—443. Electrical Hazards in the Steel Industry. 1926—463.
Crane, J. B., The Trend of Boiler Development. 1922—557.
Crolius, F. J., Pulverized Firing in Steam Generation. 1921—161.
Cronk, H. C., Practical Operation of Motor-Driven Continuous Mills. 1918—35.
Crosby, F. B., The Electrical Engineer in the Steel Plant and Out. 1921—563.
Crow, T. D., Design and Application of Ball Bearings. 1924—233.
Crump, R. F., Steel Treating and its Value to the Steel Engineer. 1925—409.
Cummins, A. C., and A. R. Leavitt, Single Bucket Blast Furnace Skip Hoist Characteristics. 1923—453.
Cummins, A. C., Developments in Electrical Maintenance Shop Practice. 1924—579. The Standardized Commutating Pole Mill Type Motor. 1926—427.
Cummings, Robert A., Reinforced Concrete Poles. 1912—343.

D

Daniels, F. H., Stokers and Their Recent Developments. 1922—163.
Day, P. C., Herringbone Gears for Steel Mills. 1913—295. Flexible Couplings. 1923—204.
Dawson, T. C., Recovering Armature Shafts with Arc Welding. 1925—187.
Davenport, R. B., Dynamic Braking. 1912—401.
Davis, F. W., Some Applications for Oxygen to Ferrous Metallurgy. 1926—427.
Davis, R. W., Flexible Couplings. 1923—216. Adjustable Speed Motor Drives. 1923—645.
Davis, R. W., J. D. Wright and O. H. Needham, Electrically Driven Reversing Mills. 1924—513.
Dean, D. W., Motor Driven Bloom Shear Without Clutch. 1926—338.
De Boos, F. A., Stokers and Their Recent Developments. 1922—163.
Dickerman, Judson C., The Giant Power Survey of Pennsylvania. 1924—379.
Dickinson, E. D., The Mixed Pressure Steam Turbine with Special Reference to the Use of the Steam Regenerator. 1912—43.
Dobrin, H., Value of By-Product Gas to Industry. 1922—79.
Donovan, J. D., Electric Furnaces. 1917—671.
Dreyfus, Edwin O., Prime Movers for Central Stations; Their Economic Relation. 1911—138.
Dudley, R. W., The Static Condensers on Steel Mill Loads. 1925—246. Steam vs. Electric Driven Mills. 1920—73.
Dunn, Gano S., Mill Motors. 1907 Paper 7. Crocker-Wheeler Mill Motors. 1908 Paper 14. First Cost and Operating Expenses of Mixed vs. Exclusively Alternating Systems in Steel Mills. 1910—65.
Dunn, W. V., Alternating Current in By-Product Plants. 1921—249.
Dwight, H. B., Steel Conductors for Transmission Lines. 1916—205.

E

Eastwood, Arthur C., Automatic Motor Control. 1911—25.
Eastwood, Harry W., Machine Tool Control. 1914—585.
Egan, F. D., Underground Transmission in a Steel Plant. 1914—295. Modern Steel Mill Crane Specifications. 1916—745. Mechanical and Electrical Analysis of 40-inch Blooming Mill Screwdown. 1924—487.
Egan, Leonard W., The Complete Electrification of the Foundry Industry. 1923—377. Electrification and Simplification—Their Effect Upon The Foundry's Future. 1926—303.
Ehrhart, R. N., Condensers and Their Auxiliaries. 1914—543.
Elliott, A. F., Electric Mining Equipment; Its Selection, Care and Operation. 1924—871.
Emmons, G. C., Coke Braize. 1925—276.
Eppelsheimer, D. E., Steam vs. Electric Driven Mills. 1920—50.
Estep, F. L., Foreign Steel Mill Practice. 1925—319.
Escholz, O. H., Some Recent Investigations in Arc Welding. 1917—697.
Evans, N. J., Fuel Applications—The Essential Factors in Furnace Design. 1925—263.
Evans, W. A. D., The Mercury-Vapor Quartz Lamp. 1913—145.

F

Falter, P. H., The Generation of Steam by Electricity. 1923—231.
Farrington, James, By-Product Coke Ovens. 1917—227.
Farrington, James, and R. H. McLain, Grab Bucket Coal Hoists Operated by Alternating Current Motors with Dynamic Braking and Regenerative Braking. 1917—439.
Fast, Gustave, Flexible Couplings. 1923—188. Mill Type Coupling Designs. 1926—100.
Faulkner, J. A., Utilizing Waste Fire Bricks. 1926—218.
Fennell, B. C., Steam vs. Electric Driven Mills. 1920—53.
Fernow, Jr., B. E., Design and Use of Lifting Magnets. 1913—101. Magnetic Brakes. 1914—611.
Finks, G. H., The Conversion of Alternating Current to Direct Current. 1924—1.
Fischer, Carl, R. E. Hall and George W. Smith, The Prevention of Scale Formation by Boiler Water Conditioning. 1924—353.
Fish, E. R., and Alfred Cotton, Heine Boiler Practice in 1922. 1922—572.
Fish, G. D., and A. M. Candy, Tests of Arc Welded Structural Steel. 1926—380.
Fisher, Frank E., Electric Industrial Locomotives. 1924—913.
Fixter, Walter, and Kenneth Andrew, Electric Locomotives for Industrial Purposes. 1919—283.
Flanagan, W. N., The Control of Boiler Operation. 1921—295. Bent Tube vs. Straight Tube Boilers. 1922—321.
Fleming, R., Structural Steel Poles and Towers. 1912—358.
Fortune, F. R., Cooper-Hewitt Lamps for Industrial Lighting. 1907 Paper 10. The Light for Safety. 1911—155.
Fox, Gordon, Auxiliary Drives. 1919—123. Considerations Concerning Auxiliary Drives. 1920—343. Electric Heating of Finishing Rolls of Sheet and Tin Mills. 1923—253. Steam vs. Electric Driven Mills. 1920—70.
Frank, Carl George, Progress in the Iron and Steel Industry and the Electric Furnace. 1915—105.
Freret, A. L., Heating of Underground Cables. 1919—209. Underground Transmission. 1920—327. The Freret Safety Enclosed Knife Switch. 1924—444.
Friedlaender, E., Electric Cranes for Steel Mill Service. 1911—56. Questions on Motor Drive for Main Rolls. 1913—209. Motor-Generators vs. Rotary Converters. 1915—57.
Fries, J. E., 60 Cycles vs. 25 Cycles in Steel Mills. 1918—543. Influence of Gear Ratio on Speed of Operation, Motor Heating and Contactor Wearing Auxiliary Steel

Mill Drives. 1919—671. Improvement in Rotors. 1924—61.

G

Gadsby, G. M., and E. C. Stone, Central Station Power Rates. 1919—223.
Gage, Gordon—Slip Regulators vs. Notchbacks. 1920—653.
Galbraith, L. F., Report of Educational Committee. 1921—509.
Gale, R. F., Organization-Departmental. 1922—805.
Garrett, Jr., W. W., Main Hoists for Open Hearth Ladle Cranes. 1919—271. Auxiliary Motor Control. 1925—89.
Gassman, H. M., Special Lighting for Steel Mills. 1911—160.
Gerhardt, R. B., Hydraulic vs. Electric Drive for Steel Mill Auxiliaries. 1919—85. Electrical Features of a Modern Steel Plant. 1920—77. Electrification of the Steel Plant Railroad. 1921—535. Some Considerations in the Electrification of the Steel Plant Railroad Yard. 1922—461. Electrical Development Committee Report for 1922. 1922—605. Records and Tests. 1919—389. Electrical Development Committee. Report 1921—497.
Ghosh, S., Electrification of Tata Iron Works as Jamshedpur, India. 1924—545.
Gilson, B. W., Apprenticeship System as Applied to Steel Mills. 1914—89.
Glew, John, Pulverized Coal Used as Fuel in Sheet Mills. 1924—553.
Green, B. W., Steel Plant Power Generation from Waste Heat and Coal. 1920—21.
Greenwood, Walter, Installation of Electrical Equipment to Comply with Requirements for Safety. 1915—299. Safeguarding Electrical Equipment. 1917—253. Automatic Engine Stops. 1918—325. Standardization of Electrical Equipment and Its Relation to Accident Hazard. 1920—297. Comments on Safety Committee Work. 1921—597. Standardization of Engine Stops. 1923—355. Standardization of Engine Stops. 1924. Crane Hoist Travel Limit Devices. 1924—701. Accident Prevention. 1925—184. Guarding Against the Invisible Hazards of Electrical Installations. 1926—336. Discussion of Electrification of Plant Railroads. 1926—384.
Gurney, F. W., Application of Anti-Friction Bearings. 1924—147.

H

Hall, David, The Advantages of Modern Types of Direct Current Machines. 1916—83.
Hall, R. E., Carl Fischer and George W. Smith, The Prevention of Scale Formation by Boiler Water Conditioning. 1924—353.
Hall, W. S. A. C. vs. D. C. Motors for Rolling Mill Table Drives. 1919—419. The Application of Electric Power in the Iron and Steel Industry. 1922—127.
Handy, A. E., Blast Furnace Skip and Bell Hoists. 1912—15.
Hanson, F. A., Electric Heating Applied to the Steel Industry. 1922—837.
Harper, W. J., Open Hearth Roof Construction. 1926—299.
Harrington, James, Stokers and Their Recent Developments. 1922—163.
Harrison, Ward, Some Features of Good Steel Mill Illumination. 1911—198. The Incandescent Lamp in the Steel Industry. 1912—168. Some Recent Advances in Industrial Lightning. 1917—635. Report of Standardization Sub-committee on Illumination. 1920—569.
Harrison, Ward, and H. H. Magdsick, A Progress Report on Illumination. 1913—241.
Hays, J. W., The Relation of the Engineer to Fuel Conservation. 1922—395.
Heath, L. A., The Proper Selection of Carbon Brushes. 1921—51.
Heitman, A. C. Generators and Induction Motors. 1907 Paper 8.
Heller, L. W., Steam Turbine Operation. 1922—723.
Henderson, C. T., Magnetic and Mechanical Control for Motors. 1907 Paper 12. Resistance Grid-Interlocking Systems-Controlling Apparatus at Gary. 1908 Paper 8
Henthorn, A. L., Application of High Duty Worm Gears in Steel Plants. 1926—205.
Hepburn, W. M., Surface Combustion and Its Application. 1923—537.
Hershberger, David C., Discussion on Steel Mill Yard Electrification. 1926—378.
Hershberger, David C., and O. Needham, Economies of Steel Plant Railroad Electrifications. 1926—263.
Hess, L. J., Roller Bearings Applied to Mill Motors. 1922—811.
Holcomb, A. B., Sheet and Tin Mills. 1920—611.
Hollis, Harry, The Magnetized Roller Conveyor. 1924—248.
Holmes, George R., Application of Anti-Friction Bearings to Steel Mill Machinery. 1926—104.
Holslag, C. J., Electric Arc Cutting and Welding. 1919—618.
Holveck, J. E., Holveck Synchronized Suction Valve Control for Hydraulic Pumps. 1924—97.
Hornlein, Wm. H., Central Station Power. 1917—667.
Howe, James F., Wire Rope and its Relation to Steel Making. 1915—113. A Discussion of Present Day Wire Rope Problems. 1925—311.
Huessener, K., The Slagging Producer in Steel Works. 1924—669.
Huey, Ray S., The Value of Records to an Operating Engineer. 1916—343.
Hughes, G. A., Spot Welding. 1924—597.
Hull, R. C., The Application of Storage Batteries to Iron and Steel Mills. 1908 Paper 10.
Hunnupton, Louis R., Experiences with Multiple Feed, High Pressure Lubrication. 1924.
Hunt, C. H., Engine vs. Motor Drive for Reversing Blooming Mill. 1924—345.
Hurme, E. A., Medium and Low Temperature Applications. 1924—771. Factors Involved in the Selection of Direct-Connected and Geared Main Roll Drives. 1925—189. Electric Heat Treating Furnace Applications. 1925—357.

I

Iverson, L., Manipulators for Blooming Mills. 1926—437.

J

Jackson, R. P., Lightning Protection. 1907 Paper 13.
Jacobus, D. S., High Pressure Steam Boilers. 1923—753.
James, H. D., Control of Motor Driven Auxiliary Apparatus in Steel Mills. 1908 Paper 6. Recent Improvements in Industrial Control. 1919—447.
James, H. D., and F. J. Burd, Electric Skip Hoists and Bell Hoists. 1917—17.
Jefferies, E. A. W., The Influence of Cheap Oxygen on Economy of Fuel and of Time. 1921—329.
Jefferies, E. S., Operating Characteristics of an Electric Reversing Blooming Mill. 1916—309. Steam vs. Electric Driven Mills. 1926—57. Electrical Development Committee Report for 1920. 1920—381.
Jelley, J. F., An Electrical Method for the Heat Treatment of Carbon Steel. 1924—85.
Jenks, J. F., Resuscitation of Victims from Accident Shocks. 1909—22.
Jones, Noble, Strip Steel and Mills for its Production. 1926—155.

K

Keating, T. E., Some Economic Considerations in Design of Power Plants for Steel Mills. 1920—455.
Keil, R. H., Current Limiting Reactances. 1920—481.
Keim, L. H., Flexible Couplings. 1923—225.
Kelly, H. D., Thermit Welding. 1925—119.
Kelly, J. F., Machine Tools and Their Auxiliaries in the Steel Mills. 1924.
Kelly, H. D., Thermit Welding. 1925—119.
Kendall, E. H., New Types of Soaking Pit Cranes. 1907 Paper 6. Latest Developments of Electric Cranes for Steel Mills. 1915—281.
Kennedy, Walter C., Electrical Resistance Materials. 1921—241. Heroult Electric Furnaces. 1917—287. Control of Mill Tables and Screw-Downs. 1920—223. 120-in. Motor Driven Plate Mill. 1923—39. Electrical Development Committee Report for 1923. 1923—523.
Kieft, E., Strength of Gear Teeth. 1926—405. Steel Production and Fuel Consumption. 1926—471.
King, L. J., Electric Repair Shop Practices of the Pittsburgh Railways Co. 1925—100.
Kinkaid, R. A., Some Practical and Theoretical Considerations in Design of Electric Arc Welding Apparatus. 1919—614.
Kinsloe, Charles L., The Application of the Principle of Surface Contact to Industrial Haulage. 1915—441.
Kintner, S. M., History and Future of Radio. 1925—418.
Klein, C. J., Manipulators for Two-High Reversing Blooming Mill. 1926—439.

Kneass, Jr., Strickland, Heating Furnaces—Brier Hill Sheet Mill. 1925—225.

L

Lamme, B. G., Some Electrical Problems Practically Considered. 1914—13. Frequency Problem in the Steel Industry. 1921—69.
Lamme, B. G., and W. Sykes, A Review of Steel Mill Electrification. 1922—583.
Lammers, Jr., E. S., Automatic Control of Reversing Rolling Mill Equipment. 1920—137. Report of Standardization Sub-committee on Cranes. 1920—539.
Lankton, Clark S., Purchased Power for Steel Mills. 1915—193.
Lanphier, R. C., Watthour and Ampere-Hour Meters and Their Applications in Steel Mills. 1914—419.
Lavine, Saul, Switchboards and Switching for Steel Mills. 1914—133.
Lawrence, H. F., Stokers and Their Recent Developments. 1922—163.
Leahy, F. E., Fuel Requirements of Steel Mills. 1921—341. Gas Producer Operation. 1926—294.
Leavitt, A. R., and A. C. Cummins, Single Bucket Blast Furnace Skip Hoist Characteristics. 1923—453.
Leavitt, A. R., Report of Standardization Sub-committee on Transmission. 1922—665.
Levin, I. H., Simultaneous Production of Oxygen and Hydrogen. 1923—117.
Lewis, H. A., and W. H. Burr, Automatic Door Hoists for Open Hearth Furnaces. 1918—209.
Lichtenberg, Chester, Automatic Electric Stations for Steel Mills. 1924—252.
Ligon, William D., Underground System of Distribution. 1912—297.
Lincoln, J. F., Arc Welding. 1912—133.
Lincoln, P. M., Advantages of Motor-Generator Sets and Rotary Converters for D. C. Systems. 1907 Paper 14. Recent Developments in Power Generating Apparatus. 1915—45. Reminiscences of Niagara. 1916—484. Overload Protection for Motors. 1919—525.
Lindemuth, L. B., and Geo. H. Schaeffer, Electric Furnaces. 1918—609.
Lindquist, David L., Recent Developments of Electric Skip Hoists and Bell Hoists for Blast Furnaces. 1918—143.
Lumm, W. O., A.C. and D.C. Magnetic Control for Auxiliary Motors. 1914—239.
Lynch, T. D., Babbitts and Babbitting. 1920—161.

M

MacCutcheon, A. M., Cost vs. Upkeep of Direct Current Motors. 1916—371. Anti-Friction Bearings in the Steel Mill. 1921—429.
MacDonald, A. A., and Frank W. Cramer, Reducing Power Bills on Mine Fans with Synchronous Motors. 1922—213. Some Factors Entering into the Selection of Motors for Mine Hoists. 1923—627.
Magdisick, H. H., and Ward Harrison, A Progress Report on Illumination. 1913—241.
Mahoney, F. D., and Merrill Skinner, The Steel Industry and the Electric Utilities. 1924—651.
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Mandeville, Lee H., Departmental Organization. 1922—797.
Martindale, E. H., Manufacture, Selection, and Use of Carbon Brushes. 1917—399.
Marsh, Thomas A., The Tempering of Coal. 1923—367. Stokers and Their Recent Developments. 1922—163.
Menk, C. A., Electrical Repair Shop. 1919—381.
McCarty, R. A., Some Fundamental Considerations of Power Factor Correction. 1918—19.
McCloud, Don B., Production of Oxygen from the Air. 1925—127.
McDermott, G. R., Waste Heat Utilization for Steam Generation. 1921—357. Power Generation in Modern Steel Works. 1924—169. The Application of Blast Furnace Gas and Air for Blowing a Gas Producer. 1925—269.
McElhinney, E. L., Mechanical Installations-Brier Hill Sheet Mill. 1925—222.
McKee, F. W., An Electrically Operated Central Pumping Station. 1911—125.
McKinley, Jos., The Use of Central Station Power Service in Steel Mills. 1916—505.
McKinley, Jos., and Ray L. Baker, Central Station Power Supply to Iron and Steel Industry. 1917—339.
McLain, R. H., and James Farrington, Grab Bucket Coal Hoists Operated by Alternating Current Motors with Dynamic Braking and Regenerative Braking. 1917—439.
McLain, R. H., Bridge Motors for Overhead Traveling Cranes. 1918—347.
McMillan, L. B., Insulation of Hot Surfaces and Furnace Walls. 1925—301.
McShane, Phelan, New and Interesting Auxiliary Motor and Control Applications. 1926—514.
Miller, Dwight D., The Economies of Electric Heat in Metallurgical Processes. 1924—129.
Milliken, J. H., Power Rectifiers. 1921—645.
Mills, George B., Electric Annealing and Heat Treating Furnaces. 1921—1. Essentials of Design of Electric Industrial Furnaces and Their Application to Leveling up Load Curves. 1925—136.
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Moore, Edward T., Report of Electric Furnace Committee for 1920. 1920—497. Electric Furnace Committee Report. 1921—587. Electric Furnace Phenomena. 1923—569.
Moore, James W., Electricity in the Pipe Foundry. 1924—189.
Morgan, J. A., and J. J. Booth, Inspection and Operation of Electrical Apparatus. 1919—369.
Mosley, H. C., and R. H. Rogers, Electric Power at Portsmouth Works of the Wheeling Steel Corp. 1924—183.
Morse, F. L., Silent Chain Power Transmission . 1914—465.
Mortensen, N. L., Controllers for Ore Unloaders and Ore Bridges. 1923—1. Direct Current Hoist and Trolley Control for Ore Bridges. 1924—879.
Muir, R. C., Low Pressure Turbines in Steel Plants. 1909 Paper 9. Steam Turbines in Iron and Steel Plants. 1910—56.
Mundo, C. J., Iron and Steel Works Illumination. 1911—165. Curves and Data for Illumination Calculations. 1912—188.
Murray, J. S., Anti-Friction vs. Sleeve Bearings. 1924—139.

N

Neal, R. A. Power Factor Correction. 1924—564.
Needham, O., and David C. Hershberger, Economies of Steel Plant Railroad Electrification. 1926—263.
Needham, O. H., J. D. Wright, and R. W. Davis, Electrically Drives Reversing Mills. 1924—513.
Needham, O., Observations on Rolling Mill Drives in Continental Europe. 1925—327.
Newton, G. J., Underground Distribution Systems. 1916—171.
Northwood, John, Bethlehem Steel Company's New Gautier Mills from a Safety Standpoint. 1926—495.
Nusim, M. I., Mixed Flow Turbines. 1916—601.
Nye, Ralph D., Electrical Reversing Blooming Mills. 1917—351.

O

Oartel, John A., How the Electrical Engineer and the Safety Engineer Can be Mutually Helpful. 1925—354.
Oliver, J. M., Interchange of Power in the Southeastern States. 1924—575.
Oschmann, W. O., A Synchronous Condenser Installation for Power Factor Correction and Voltage Regulation. 1914—109. Power Accounting. 1917—163.
Osgood, H. W., The Electrical Features of Hog Island Ship Yard. 1919—33.
Ostrander, J. R., Automatic and Remote Controlled Sub-Stations as Applied to Steel Mills. 1922—365.

P

Palmer, Lew R., Organized Safety. 1914—447.
Paterson, E. G., Full Reverse A.C. 2-Speed Mill Controller. 1926—481.
Patterson, R. F., Improving Non-Condensing Power Plant by Use of Direct Current, Mixed Pressure Turbine Equipment. 1915—153.
Pauley, K. A., Application of Large Motors to Reversing and Non-Reversing Rolling Mills. 1907 Paper 4. Varible Speed Drives for Main Rolls of Steel Mills. 1913—267. Some of the Latest Developments in Electrical Equipment. 1915—81. Standardization of Ratings of Large Rolling Mill Motors. 1918—447. The

Electric Reversing Mill Considered from the Standpoint of Tonnage. 1920—415. Steam vs. Electric Driven Mills 1920—54.

Payne, Harold J., How Electric Industrial Truck and Tractor Equipment is Effecting Savings in the Iron and Steel Industry. 1926—274.

Peebles, T. A., Combustion Control. 1925—291. Stokers and Their Recent Developments. 1922—163.

Pendleton, D. D., Condensers and Condenser Engineering Practice. 1918—385.

Penman, J. R., Motor Driven Accumulator Pumps. 1923—44.

Penniman, Jr., A. L., and F. W. Quarles, Auxiliaries and Auxiliary Drives for Steam Electric Generating Stations. 1925—377.

Peterson, E. G., Full Reverse A.C. 2 Speed Mill Controller. 1926—481.

Petry, Walter, Steel Plant Maintenance by Autogenous Welding. 1921—679.

Pettibone, W. W., The Efficient Burning of Fuel and Use of Waste Gases in Iron and Steel Plants. 1922—49.

Petty, D. M., Some Electrical Applications in Steel Mill Practice. 1915—233. Alternating Current Phase Wound Motors vs. Adjustable Speed Direct Current Motors. 1916—719. Electric Drives for Reversing Rolling Mills. 1917—361. Transmission and Distribution of Power in Industrial Plants. 1920—309. Power Generation in Steel Mills and its Relation to Frequency. 1921—199. General Specification for A.C. Motors for Main Roll Drives. 1921—479. Report of Standardization Sub-Committee on Motors. 1920—555, 1922—673. Electrification of Industrial Plant Railways. 1922—153. Internal Combustion Engines for Power Generation in Steel Plants. 1922—709. The Liquid Slip Regulator or Rheostat. 1923—485. Report of Special Bearings Committee. 1923—499. Ball and Roller Bearings. 1924—131.

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Place, A. G., Overload Protection on Cranes. 1919—545.

Plumley, M. S., The Accomplishments and Possibilities of Oxy-Acetylene Process. 1912—151.

Poole, E. J., Improvements at the Plant of the Carpenter Steel Co. During the Last Decade. 1926—91.

Potter, W. B., and G. H. Shapter, Yard Switching and Mill Transportation. 1926—259.

Powell, J. A., Design and Test of Susquehanna Station, Metropolitan Power Co. 1926—167.

Powell, W. H., and G. M. Albrecht, Direct Current Armature Windings for Multi-Polar Generators and Motors—Frogleg Windings. 1925—345.

Poynton, W. P., The Selection and Operation of Carbon Brushes. 1913—9.

Pragst, E., and David B. Rushmore, Generating Station Development. 1922—461.

Pratt, H. P., The Measurement of Electricity as Applied to Industrial Plants. 1925—94.

Price, W. H., Grounding the Neutral for D.C. Distribution Systems. 1919—305.

Q

Quarels, F. W., and A. L. Penniman, Jr., Auxiliaries and Auxiliary Drives for Steam Electric Generating Stations. 1925—377.

R

Randorf, Charles A., Design of Structures for Steel Works. 1916—427.

Rapelye, H. A., Direct Current Turbine Generating Units. 1913—51.

Raynor, Kenneth M., Power Transmission in Industrial Plants. 1922—1.

Rea, N. L., Maintenance of Electric Motors. 1926—461.

Read, E. K., and M. J. Wohlgemuth, Selection and Maintenance of Oil Circuit Breakers. 1925—398.

Reed, C. B., Electricity Applied to the Mechanical Mining of Coal. 1919—179.

Reed, John C., Electricity in the Iron and Steel Industry. 1925—435.

Reynolds, H. R., Ball Bearing Applications and Maintenance. 1924—167.

Rhodes, E. F., Electrical Installations-Brier Hill Sheet Mill. 1925—224.

Rice, Richard H., Turbo-Generators. 1917—479.

Richardson, G. W., Heavy Starting and Heavy Duty D.C. Motors in Steel Plants. 1907 Paper 2. Electric Motors for Heavy Torque and Rapid Reversals. 1908 Paper 3. Rules for Crane and Motor Operators to Avoid Accidents. 1909—20. Cranes, Motors and Controllers. 1909 Paper 2. Direct Connected Reversing Motor Drive for Planers. 1911—43. Mechanical and Electrical Operation of Heroult Electric Arc Furnaces. 1916—399. Dynamic vs. Mechanical Braking. 1921—265. Electric Crane Wiring Diagram. 1923—36. Worm Gearing for Electric Cranes. 1925—227.

Roberts, S. N., Remodeled and Electrified Rod Mill. 1925—153.

Rogers, R. H., and H. C. Mosley, Electric Power at Portsmouth Works of the Wheeling Steel Corp. 1924—183.

Rowan, John S., Standardized Mill Table Controllers. 1918—169.

Rush, R. M., The Modern Sectional Header Boiler. 1922—569. Alternating Cutting Arc Welder. 1919—623.

Rushmore, D. B., Apparatus Built by the General Electric Co. for Mill Service. 1907 Paper 3. New Aluminum Steel Lightning Arresters. 1908 Paper 11.

Rushmore, D. B., and E. Pragst, Generating Station Development. 1922—473.

S

Sawdey, Roy S., Electric Furnace Installation. 1924—725.

Sawtelle, E. S., Tool Steel Gears and Pinions for Mill and Industrial Service. 1917—517.

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Schaeffer, George H., and L. B. Lindemuth, Electric Furnaces. 1918—609.

Schaeffer, Geo. H., Report of Electric Furnace Committee. 1924—731.

Schnure, F. O., Electric Transportation. 1923—335. Application of Synchronous Motors to Continuous Mills. 1925—226. The Generation of Electrical Power Using Waste Heat. 1926—407. Third Rail Locomotive for Yard Service. 1924—250.

Schwarz, Fred J., Frequency Converters for Interchange of Power Between Steel Mills and Central Stations. 1926—208.

Scott, Charles F., Some Important Phases of Electric Power for Steel Mills. 1908 Paper 3.

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Seede, J. A., New Mill Type Motor. 1907 Paper 5. Electric Furnaces. 1909 Paper 8. Electric Melting Furnaces. 1924—735. Electric Melting Furnaces. 1925—368.

Seibert, H. C., Economical Use of Fuel in the Steel Plant. 1923—661. Steam vs. Electric Driven Mills. 1920—35.

Serrell, John J., Flexible Couplings for Steel Mills and Other Drives. 1923—177.

Shapter, G. H., and W. B. Potter, Yard Switching and Mill Transportation. 1926—259.

Shirk, William S., Renewal Parts and Renewal Part Records. 1926—466.

Shover, B. R., and Edward J. Cheney, Cost and Efficiency of Alternating vs. Direct Current Motor for Steel Mill Auxiliaries. 1911—90.

Shover, B. R., Discussion of Paper on Steel Works Illumination. 1911—194. Power in the Iron and Steel Industry. 1924—639. Steam vs. Electric Driven Mills. 1920—67.

Sibley, E. D., Electric Heating with Special References to Central Stations. 1924—799. Grounding the Neutral. 1925—331.

Sims, W. F., Calumet and Crawford Ave. Stations of the Commonwealth Edison Co. 1924—382.

Skinner, C. E., Relative Efficiency of Insulation of 220 and 440 Volt Apparatus. 1907 Paper 17. Effect of Temperature on the Insulation of Dynamo-Electric Machinery. 1912—287. Steel Mill Electrical Machinery and the Insulation Problem. 1924—101.

Skinner, Merrill, and F. D. Mahoney, The Steel Industry and the Electric Utilities. 1924—651.

Slepian, J., Natural Electricity and Lightning Protection. 1926—140.

Slocum, G. Frank, Points in the Favor of the A.B. and Opposed to Other Makes of Flame Lamps. 1910—28.

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Smith, Carl J., Boiler Troubles from the Operating Man's Standpoint. 1923—343. Pressure Regulators at the Inland Steel Co. 1925—424.

Smith, C. J., Methods of Acceleration of Direct Current Mill Auxiliary Motors. 1926—125.

Smith, George W., R. E. Hall, and Carl Fischer, The Prevention of Scale Formation by Boiler Water Conditioning. 1924—353.

Smith, L. M., The Operation of Frequency Changers. 1922—773.

Smoot, C. H., Combustion Control by Machinery. 1925—286.

Snow, F. Herbert, Discussion of the Public Service Commission of the Commonwealth of Penna. Relative to Rates of Electric Light and Power. 1924—387.

Snyder, W. T., Crane Track Wheels. 1911—72. Tubular Poles for Line Construction. 1912—322. Objects and Scope of the A. I. & S. E. E. 1916—469. Review of the Safety Work of the A. I. & S. E. E. 1916—501. Standardized Motors for the Steel Industry. 1918—99. Remote Controlled Sub-Stations. 1918—479. Standardization Committee Report. 1920—539.

Soderberg, A. W. Apprenticeship and Educational Work in the Iron and Steel Industry. 1915—371.

Soule, H. C., Transformers for Steel Mill Service. 1911—46.

Southgate, George T., The Combustion Flame Electrode. 1923—87.

Spackman, G. D., Improvements in Steam Practice as Accomplished at Lukens Steel Company. 1923—703.

Specht, H. C., Windings of Electric Machines. 1912—269.

Spencer, Millard C., Some Recent Developments in Induction Motor Starting. 1921—277.

Spitzglass, J. M., Measurement of Input and Output in Boiler Rooms. 1924—317.

Standing, A. J., Steel Mill Electrical Repair Shop Practice. 1920—109. Some Steel Mill Crane Problems. 1923—33.

Stansel, N. R., Electric Furnaces in Manufacturing. 1926—497.

Steinmetz, Charles P., Protection and Control of Industrial Electric Power. 1915—15. Modern Trend of Power Development. 1922—357. Improvement in Efficiency of Electric Power Supply. 1922—641.

Stephens, C. E., Mill and Metallic Arc Lamps. 1907 Paper 16.

Sterens, F. W., Electric Drilling and Reaming. 1908 Paper 2.

Stevens, R. H., New Rolling Mills; Gautier Plant, Cambria Works, Bethlehem Steel Co., Johnstown, Pa. 1926—446.

Stickney, G. H., Illumination for Iron and Steel Mills. 1910—37. High Candle-Power Mazda Lamps for Steel Mill Lighting. 1914—649.

Stoeckel, A. P., The Induction Drive. 1908 Paper 4.

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Stone, E. C., and G. M. Gadsby, Central Station Power Rates. 1919—223.

Stone, E. C., Power Systems and the Steel Industry. 1922—279.

Stratton, H. F., Combination Manual and Magnetic Switch Controllers. 1908 Paper 9. Magnetic Control Characteristics. 1914—211. The Operation of Mechanically-Connected Direct Current Motors Permanently in Series or Permanently in Parallel. 1916—655. An Automatic Starter for Induction Motors. 1917—197.

Sturdevant, Charles R., Underground Cables. 1912—307.

Sturtevant, J. T., Electrically Driven Mills. 1918—429.

Suekoff, Samuel, Automatic Telephones in the Steel Industry. 1915—419.

Sullivan, John, The Bessemer Process of Making Steel. 1921—91.

Suppler, W. C., Electrical Department Organization in a Steel Mill and its Duties. 1919—203.

Swindler, Charles M., Safe Crane Operators Physical and Mental Requirements. 1926—403.

Swann, Theodore, Manufacture of Phosphoric Acid. 1922—361.

Sykes, Wilfred, Liquid Rheostats for Industrial Purposes. 1910—30. Power Problems in Steel Mills. 1912—79. Notes on the Present Status of Electric Furnaces. 1913—283. Economics of Electric Drive in Steel Mills. 1914—597. Electrically Driven Reversing Mills. 1914—667.

Sykes, Wilfred, and G. E. Stoltz, Control of Induction Motors for Rolling Mill Drive. 1914—357.

Sykes, Wilfred, and Brent Wiley, The Electrification of Steel Mills and the Use of Central Station Power. 1915—177.

Sykes, Wilfred, and B. G. Lamme, A Review of Steel Mill Electrification. 1922—546.

Sykes, W. E., Gear Drives in Steel Mills. 1925—146.

T

Talley, R. E., Electric Heat in the Iron and Steel Industry. 1926—101.

Talbot, H. H., Gear Drives in the Steel Mills. 1924—607.

Tanzer, E. D., Requirements of Lightning Arresters and Factors Effecting their Performance. 1926—136.

Tate, Thos. R., Application of Waste Heat Boilers to Open Hearth Furnaces. 1920—641.

Thompson, H. E., Modern Methods of Lubrication as Applied to Cranes in Steel Mills. 1924—435.

Tice, H. W., Machine Tool Drives: Motors and Controllers. 1919—1.

Toerring, C. J., Flaming Arc Lamps; Their Operation and Demonstration. 1909 Paper 12.

Torchio, Philip H., Practical Installation of Underground Cables. 1923—269.

Towne, H. M., Protection Against Overvoltage in the Iron and Steel Industry. 1923—49. Lightning Arrester Design and Research. 1926—474.

Townsend, F. P., Recent Developments in Automatic Control. 1917-77.

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Trexler, E. W., Continuous Bloom and Billet Heating Furnaces. 1926—300.

Trinks, W., The Unaflow Engine. 1916—139. The Mesta Flexible Coupling. 1923—210.

Trumpler, W. E., Flexible Couplings. 1923—219.

Tschentscher, R., Statistical Data of Electrical Applications in the Iron and Steel Industry in the U. S. 1914—83.

Tynes, T. E., Lubrication and Methods of Lubricating Cranes. 1911—68. Storeroom and Spares. 384.

U

Uhl, H. C., Electrical Drives for Rolling Mills. 1925—322. The Super-Synchronous Motor. 1925—336. Speed Regulating Induction Motor Synchronous Generator Frequency Changer Equipments. 1926—213.

Umansky, L. A., Adjustable Speed Drives for Rolling Mills. 1924—817. Selection of Electric Drives for Reversing Mills. 1925—479.

Unland, H. L., Electric Arc Welding. 1918—239. Arc Welding Equipment for Steel Mills and Foundries. 1919—606.

V

Van Blarcom, Howell, Steam Turbines. 1907 Paper 15.

Van Brunt, John, Generation of Steam from Coke Braize. 1925—274. Extending the Heat Cycle in Boiler Rooms by the use of Preheated Air for Combustion Purposes. 1925—416.

Vanderwaart, P. T., Power Factor Correction and its Relation to Plant Operation. 1921—213. Safety Switches. 1922—873. Systematizing the Work of an Electrical Engineering Division. 1923—553. Installation and Operation of Static Condensers. 1923—739.

Vincent, H. B., Power Transmission. 1919—135.

Voss, J. A., Good Order as an Essential for Safety. 1926—376.

W

Wachtler, U. B., Mounting and Maintenance of Roller Bearings in Electric Motors. 1924—207.

Walsh, W. W., Electrolysis and Modern Cable Construction. 1919—97.
Walz, G. J., Foot Control. 1923—46.
Warner, W. L., Electric Arc Welding in the Steel Industry. 1925—115.
Warren, Frank, Electric Welding Machines. 1912—140.
Waters, G. A., Power Transformer Construction for Steel Mills. 1914—391.
Watson, F. C., Electrification of the International Nickel Company's Works for Monel Metal. 1922—415. Electrically Heated Hot Top Ingots. 1926—83.
Watts, H. S., Fuel Gases and their Use in Iron and Steel Plants. 1922—97. Possibilities in Stage Heating and Steam Extraction in Steel Mill Power Plants. 1923—105.
Weischel, H., The Motor that Corrects Power Factor. 1924—43.
Wensley, R. F., Automatic Substations. 1924—1.
Whitting, M. A., Motor Control. 1910—42. New Development in Control Apparatus for Steel Mills. 1911—13. Control Characteristic of Direct Current and Induction Motors. 1913-37.
Wile, R. S., The Melting of Alloys in the Electric Furnace. 1915—393.
Wiley, Brent, Electrical Equipment in Rolling Mills. 1908 Paper 7. Recent Developments of Motors for Steel Mill Service. 1911—82. Present Status of Motor Drive for Main Rolls of Steel Mills. 1913—171. Factors Relating to the Economical Generation and Use of Electric Power in the Steel Industry. 1917—311.
Wiley, Brent, and Wilfred Sykes, The Electrification of Steel Mills and the Use of Central Station Power. 1915—177.
Wiley, F. A., and C. M. Brading, Safety Movement in Steel Mills. 1919—255. Safety Organization, General Safety Rules. 1922—673.
Wilson, J. C., Measuring Gas Electrically. 1918—115.
Winder, C. A., Electric Heat Treatment. 1919—507.
Winslow, G. H., Report on Operation of Stoeckel Induction Drive. 1908 Paper 1.
Winters, E. P., Direct Current in By-Product Plants. 1921—257.
Witting, A. G., Judging the Combustion of Gaseous Fuels from Gas Analysis. 1922—499.
Wohlgemuth, M. J., and E. K. Read, Selection and Maintenance of Oil Circuit Breakers. 1925—398.
Wood, A. R., Lightning Arrester Protection on 13,200 V. and 2,400 V. Distribution Lines. 1926—132.
Woodhull, F. H., The Regulating Storage Battery as Applied to Steel Works D.C. Generating Stations. 1911—130. Automatic Electrolytic — Oxy-Hydrogen Plant. 1919—217. Electric Cranes. 1923—41.
Worker, Joseph G., Fuel Economy by Co-operation in Establishing a Better Practice in the Operation of Stokers and Boilers. 1917—465. Extending the Heat Cycle in Boiler Rooms by the Use of Preheated Air for Combustion Purposes. 1925—391.
Wright, J. D., Speed Control of Induction Motors for Steel Mill Drive. 1916—693. Auxiliary Motors for Steel Mills. 1918—599. Electric Mill Drives. 1920—1. Control Equipments for Auxiliary Motors. 1921—615. Some Electrical Developments. 1924—58. Electrically Driven Reversing Mills. 1924—417.
Wright, J. D., R. W. Davis, and O. H. Needham, Electrically Driven Reversing Mills. 1924—513.

Y

Yawger, The Leblanc Condenser. 1909 Paper 11.
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Young, H. W., New Graphic Record for Steel Mill Service. 1910—63.

List of Subjects

A

Acceleration of Direct Current Mill Auxiliary Motors.—Methods of—C. J. Smith. 1926—125.
Accident Hazard.—Standardization of Electrical Equipment and its Relation to—Committee. 1920—297.
Accident Prevention—Walter Greenwood. 1925—184.
Accounting.—Power—W. O. Oschmann. 1917—163.
Achievements in the Steel Industry During the Year 1923. G. E. Stoltz. 1924—55.
Addition to Rolling Mills at Steubenville Plant, Wheeling Steel Corp.—M. J. Conway. 1926—239. Discussion. 1926—389.
A.C. and D.C. Magnetic Control for Auxiliary Motors. W. O. Lumm. 1914—239.
Alternating Current to Direct Current.—The Conversion of—G. H. Finks. 1924—1.
Alternating Current in By-Product Plants. W. V. Duna. 1921—249.
A. I. & S. E. E.—Objects and Scope of the—W. T. Snyder. 1916—469.
Annealing Treatment and Forging of Steel.—Electric Furnace for—Wirt S. Scott. 1918—193.
Annealing and Heat Treating Furnaces.—Electric—George B. Mills. 1921—1.
Apparatus and Appliances.—Laters Developments—Committee. 1916—533.
Apparatus Built by the General Electric Co. for Mill Service. D. B. Rushmore. 1907 Paper 3.
Application of Auxiliary Apparatus in Iron and Steel Mills. Stewart C. Coey. 1914—183.
Applications—Electrical—in the Steel Mill Industry. G. E. Stoltz. 1917—135.
Application of the Principle of Surface Contact to Industrial Haulage. Charles L. Kinsloe. 1915—441.
Applications in Steel Mill Practice.—Some Electrical—D. M. Petty. 1915—233.
Apprenticeship Systems.—Committee. 1916—615.
Apprenticeship and Electrical Work in the Iron and Steel Industry. A. W. Soderberg. 1915—371.
Apprenticeship System as Applied to Steel Mills. B. W. Gilson. 1914—89.
Armature Windings—Direct Current—for Multi-Polar Generators and Motors—Frogleg Windings. W. H. Powell and G. M. Albrecht. 1925—345.
Armature Windings. Discussion. 1925—451.
Automatic Electric Stations for Steel Mills. Chester Lichtenberg. 1924—252*.
Automatic Substations.—R. F. Wensley. 1924—1*.
Automatic Telephones in the Steel Industry. Samuel Suekoff. 1915—419.
Auxiliaries.—Magnetic Control for Steel Mill—H. H. Angel. 1926—349.
Auxiliaries and Auxiliary Drives for Steam Electric Generating Stations. A. L. Penniman, Jr., and F. W. Quarels. 1925—377.
Auxiliary Apparatus in Iron and Steel Mills.—Application of—Stewart C. Coey. 1914—183.
Auxiliary Drives. Gordon Fox. 1919—123.

B

Babbitt and Babbitting. T. D. Lynch. 1920—161.
Batteries—The Application to Iron and Steel Mills. R. C. Hull. 1908 Paper 10.
Battery—The Regulating Storage—as Applied to Steel Works D.C. Generating Stations. F. H. Woodhull. 1911—130.
Bearing—Ball—Applications and Maintenance. H. R. Reynolds. 1924—167.
Bearings.—Anti-Friction—Applications of—H. E. Brunner. 1924—179.
Bearings.—Anti-Friction—Application of—F. W. Gurney. 1924—147.
Bearings—Anti-Friction—Applications to Steel Mill Machinery. George R. Holmes. 1926—104.
Bearings.—Anti-Friction—Selection, Installation, and Operation of—J. T. R. Bell. 1924—193.
Bearings.—Anti-Friction vs. Sleeve.—J. S. Murray. 1924*.
Bearings—Anti-Friction—in the Steel Mill—A. M. MacCutcheon. 1921—429.
Bearings—Ball—Design and Application—T. D. Crow. 1924—233.

Bearings—Roller—Applied to Mill Motors. L. J. Hess. 1922—739.
Bearing—Roller—Mounting and Maintenance on Electric Motors.—D. E. Batesole. 1924—155.
Bearing—Roller—Mounting and Maintenance in Electric Motors. U. B. Wachtler. 1924—207.
Bearings.—Special—Committee. 1923—499.
Bearings.—Taper Roller—Application of—T. V. Buckwalter. 1924—133.
Bessemer Process of Making Steel. John Sullivan. 1921—91.
Blast Furnace.—The Automatic—Frank W. Cramer. 1925—229.
Blast Furnace Gas and Air for Blowing A Gas Producer.—The Application of—G. R. McDermott. 1925—269.
Blast Furnace Plant.—Power Generation by—O. C. Callow. 1925—242.
Blast Furnace Skip and Bell Hoists. A. E. Handy. 1912—15.
Blast Furnaces.—Skip and Bell Hoists—David L. Lindquist. 1918—43.
Blooming Mill—Engine vs. Motor Drive for Reversing—C. H. Hunt. 1924—547.
Blooming Mill—Operating Characteristics of an Electric—E. S. Jefferies. 1916—309.
Blooming Mills—Electrical Reversing—Ralph D. Nyc. 1917—531.
Boilers—Bent Tube vs. Straight Tube—Walter N. Flanagan. 1922—321.
Boiler Development—The Trend of—J. B. Crane. 1922—521.
Boilers—Fuel Economy by Co-operation in the Establishment of a Better Practice in the Operation of Stokers and—Joseph G. Worker. 1917—465.
Boilers—High Pressure Steam—D. S. Jacobus. 1923—753.
Boiler—The Modern Sectional Header—R. M. Rush. 1922—533.
Boiler Operation—The Control of—W. N. Flanagan. 1921—295.
Boiler Practices of 1922. R. E. Butler. 1922—525.
Boiler Practice in 1922—Heine—E. R. Fish and Alfred Cotton. 1922—536.
Boiler Rooms—Extending the Heat Cycle by the Use of Preheated Air for Combustion Purposes. Joseph G. Worker. 1925—391.
Boiler Rooms—Measurement of Input and Output. J. M. Spitzglass. 1924—317.
Boiler Troubles from the Operating Man's Standpoint. Carl J. Smith. 1923—343.
Boiler Water Conditioning—The Prevention of Scale Formation by—R. E. Hall, Carl Fischer and George W. Smith. 1924—353.
Boilers—Waste Heat—Applications to Open Hearth Furnaces. Thomas R. Tate. 1920—641.
Bricks—Fire—Utilizing Waste—J. A. Faulkner. 1926—218.
Brier Hill Sheet Mill—Inspection Trip. 1925—222.
Brier Hill Steel Plant. 1919—155.
Brakes—Magnetic—B. E. Fernow, Jr. 1914—611.
Braking—Dynamic—R. B. Davenport. 1912—401.
Braking—Dynamic and Regenerative—Alternating Current Motors—Grab Bucket Coal Hoists. James Farrington and R. H. McLain. 1917—439.
Braking—Dynamic vs. Mechanical—George W. Richardson. 1921—265.
Breaking Spindle for Main Roll Drives. J. H. Albrecht. 1924—634*.
Brushes—Manufacture, Selection and Use of Carbon—E. H. Martindale. 1917—399.
Brushes—The Proper Selection of Carbon—L. A. Heath. 1921—51.

C

Cables and Accessories—Underground—J. C. Bowman. 1914—317.
Cable Construction—Electrolysis and Modern—W. W. Walsh. 1919—97.
Cables—Heating of Underground—A. L. Feret. 1919—209.
Cables—Underground—Chas. R. Sturdevant. 1912—307.
Cables—Underground—Practical Installation of—Philip H. Torchio. 1923—269.
Calumet and Crawford Ave. Stations of the Commonwealth Edison Co.—W. F. Sims. 1924—382*.
Cambria Plant of the Bethlehem Steel Co.—Features of the New Electrical Installations at the—F. W. Cramer. 1926—443.
Cambria Works, Bethlehem Steel Co.—Inspection Trip. 1926—423.
Cambria, Works—New Rolling Mills—R. H. Stevens. 1926—446.
Cambria Works—New Gautier Mills from a Safety Standpoint—John Northwood. 1926—495.
Carbon Brushes—The Selection and Operation of—W. P. Poynton. 1913—9.
Carbon Tetrachloride Fuses—Outdoor Sub-station Practice and Use of—Alfred Alsaker. 1919—55.
Central Station Power—Electrification of Steel Mills and the Use of—Brent Wiley and Wilfred Sykes. 1915—177.
Central Station Power Service in Steel Mills—Jos. McKinley. 1916—505.
Central Station Power for Steel Mills—Committee. 1916—21.
Chain Power Transmission—Silent—F. L. Morse. 1914—465.
Characteristics—Control—of Direct Current and Induction Motors—M. A. Whiting. 1913—37.
Circuit Breakers—Oil—The Selection and Maintenance of—George A. Burnham. 1925—384.
Circuit Breakers—Oil—Selection and Maintenance of—M. J. Wohlgemuth and E. K. Read. 1925—398.
Coal—Pulverized—Used as Fuel in Sheet Mills—John Glew. 1924—553*.
Coal—Steel Plant Power Generation from Waste Heat and—B. W. Green. 1920—21.
Coal—The Tempering of—Thomas A. Marsh. 1923—367.
Coke Braize—G. C. Emmons. 1925—276.
Coke Braize—Generation of Steam from—John Van Brunt. 1925—274.
Coke Ovens—By-Product—James Farrington. 1917—227.
Combustion Control. E. G. Bailey. 1924—709.
Combustion Control—G. S. Carrick. 1925—294.
Combustion Control—T. A. Peebles. 1925—291.
Combustion Control—Automatic—E. G. Bailey. 1925—293.
Combustion Control by Machinery—C. H. Smoot. 1925—286.
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Mills—Electric Rolling—D. W. Blakeslee. 1926—163.
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Mills—Rail—D. W. Blakeslee. 1926—163.
Mills—Reversing—Selection of Electric Drives for—L. A. Umansky. 1925—479.
Mills—Structural—D. W. Blakeslee. 1926—164.
Mills—Tube—D. W. Blakeslee. 1926—147.
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Motor—The Standardized Commutating Pole Mill Type—Committee. 1926—427.
Motor—The Super-Synchronous—H. C. Uhl. 1925—336.
Motor Applications—Synchronous—James F. Burke. 1925—159.
Motors—Committee. 1922—627.
Motors—A.C.—General Specifications—Main Roll Drives—Committee. 1921—479.
Motors—A.C. phase Wound—vs. Adjustable Speed D.C. Motors—D. M. Petty. 1916—719.
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Motors—Cost vs. Upkeep of Direct Current—A. M. MacCutcheon. 1916—371.
Motors—D.C.—Adjustable Speed—vs. A.C. Phase Wound Motors—D. M. Petty. 1916—719.
Motors—Direct Current—for Main Roll Drive—Improved Rolling Mill Practice Obtained by the Use of—G. E. Stoltz. 1922—777.
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Motors—Mill—Crocker Wheeler—Gano S. Dunn. 1908 Paper 14.
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Motors for Mine Hoists—Some Factors Entering into the Selection of—F. W. Cramer and A. A. MacDonald. 1923—627.
Motors for Overhead Traveling Cranes—Bridge—R. H. McLain. 1918—347.
Motors Permanently in Series or Permanently in Parallel—The Operation of Mechanically Connected Direct Current—H. F. Stratton. 1916—655.
Motors—Standardization of—Committee. 1920—555.
Motors—Standardization of Ratings of Large Rolling Mill—1918—447.
Motors for the Steel Industry—Standardized—W. T. Snyder. 1918—199.
Motors for Steel Mills—Auxiliary—J. D. Wright. 1918—599.
Motors for Steel Mill Service—Recent Developments—Brent Wiley. 1911—82.
Motors—Synchronous—Application to Continuous Mills—F. O. Schnure. 1925—226.
Motors—Synchronous—Reducing Power Bills—Frank W. Cramer and A. A. MacDonald. 1922—213.
Motors—Type W—for Mill Service—Treat. 1907 Paper 9.

N

Neutral—Grounding the—Edgar D. Sibley. 1925—331.

O

Oil Circuit Breakers—The Selection and Maintenance of—George A. Burnham. 1925—385.
Oil Circuit Breakers—Selection and Maintenance of—M. J. Wohlgemuth and E. K. Read. 1925—398.
Open Hearth Furnaces—Application of Waste Heat Boilers to—Thos. R. Tate. 1920—641.
Open Hearth Roof Construction—W. J. Harper. 1926—290.
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Operation of Mechanically Connected Direct Current Motors, Permanently in Series or Permanently in Parallel H. F. Stratton. 1916—655.
Ore Bridges—Direct Current Hoist and Trolley Control for—N. L. Mortensen. 1924—879.
Ore Handling Costs—Walter Burr. 1923—474.
Organization—Departmental—R. F. Gale. 1922—733.
Organization—Departmental—Lee H. Mandeville. 1922—725.
Organization of the Electrical Department in the Iron and Steel Industry—Joint Paper. 1919—369.
Organization—Electrical Department—in a Steel Mill and Its Duties—W. C. Suppler. 1919—203.
Organized Safety—Lew R. Palmer. 1914—447.
Orientation of Steel Rod Mills—Guernsey H. Cole. 1925—334.
Ovens—Coke—By-Product—James Farrington. 1917—227.
Overvoltage—Protection Against—in the Iron and Steel Industry—H. M. Towne. 1923—49.
Oxy-Acetylene Process—The Accomplishments and Possibilities of the—M. S. Plumley. 1912—151.
Oxygen from the Air—Production of—Don B. McCloud. 1925—127.
Oxygen—Some Applications to Ferrous Metallurgy—F. W. Davis. 1926—427.
Oxygen and Hydrogen—Simultaneous Production of—I. H. Levin. 1922—117.
Oxygen—The Influence of Cheap—on Economy of Fuel and of Time—E. A. W. Jefferies. 1921—329.
Oxy-Hydrogen—Electrolytic—Automatic Plant—Fred H. Woodhull. 1919—217.

P

Phosphoric Acid—Manufacture of—Theodore Swann. 1922—361.
Poles—Reinforced Concrete—Robert A. Cummings. 1912—343.
Poles and Towers—Structural Steel—R. Flemming. 1912—358.
Poles—Tubular—for Line Construction—W. T. Snyder. 1912—322.
Portable Electric Tools as Applied to the Iron and Steel Industry—A. M. Andresen. 1916—447.
Portsmouth Works of the Wheeling Steel Corp.—Electric Power at—H. C. Mosley and R. H. Rogers. 1924—183*.
Power—Central Station—Wm. H. Hornlein. 1917—667.
Power Development—Modern Trend of—C. P. Steinmetz. 1922—357.
Power Factor Correction—R. A. Neal. 1924—564*.
Power Factor Correction—Some Fundamental Considerations of—R. A. McCarty. 1918—19.
Power Factor Correction and its Relation to Plant Operation—P. T. Vanderwaart. 1921—213.
Power Factor Correction and Voltage Regulation—Synchronous Condenser Installation for—W. O. Oschmann. 1914—109.
Power Factor—The Motor that Corrects—H. Weichsel. 1924—43.
Power Generation by Blast Furnace Plant—O. C. Callow. 1926—242.
Power—The Generation of Electrical—Using Waste Heat—F. O. Schnure. 1926—407.
Power Generation in Modern Steel Works—G. R. McDermott. 1924—169*.
Power Generation in Steel Mills and Its Relation to Frequency—D. M. Petty. 1921—199.
Power in the Iron and Steel Industry—B. R. Shover. 1924—639.
Power in the Iron and Steel Industry—The Application of Electric—W. S. Hall. 1922—127.
Power Problems in Steel Mills—Wilfred Sykes. 1912—79.
Power Plants for Steel Mills—Some Economic Considerations in Design of—T. E. Keating. 1920—455.
Power in the Southeastern States—Interchange of—J. M. Oliver. 1924—575.
Power Supply—Improvement in Efficiency of Electric—Charles P. Steinmetz. 1922—641.
Power Supply to Iron and Steel Industry—Central Station—Joseph McKinley and Ray L. Baker. 1917—339.
Power Survey of Pennsylvania—The Giant—Judson C. Dickerman. 1924—379*.
Power Systems and the Steel Industry—E. C. Stone. 1922—279.
Power Transformer Construction for Steel Mills—G. A. Waters. 1914—391.
Preheated Air for Combustion Purposes—Discussion. 1925—464.
Preheated Air for Combustion Purposes—Extending the Heat Cycle in Boiler Rooms by the Use of—Jos. G. Worker. 1925—391.
Preheater—The Ljungstrom Air—B. G. Brolinson. 1924—461.
Pressure Regulators at the Inland Steel Co.—C. J. Smith 1925—424.
Prime Movers for Central Stations; Their Economic Relation—Edwin D. Dreyfus. 1911—138.
Producer—The Application of Blast Furnace Gas and Air for Blowing a Gas—G. R. McDermott. 1925—269.
Protection and Control of Industrial Electric Power—Charles P. Steinmetz. 1915—15

Protection for Motors—Overload—P. M. Lincoln. 1919—525.
Pulverized Firing in Steam Generation—F. J. Crolius. 1921—161.
Pumping—An Electrically Operated Central Station—F. W. McKee. 1911—125.
Pumps—Centrifugal—Motor Operated—in Steel Plants—B. A. Cornwell. 1923—309.
Pumps—Holveck Synchronized Suction Valve Control for Hydraulic—J. E. Holveck. 1924—97.
Pumps—Motor Driven Accumulator—J. R. Penman. 1923—44.
Purchased Power for Steel Mills—Clark S. Lankton. 1915—193.
Pyrometry and Temperature Control in the Steel Industry—General Phases of—O. Brewer. 1924—116.

R

Radio—History and Future of—S. M. Kintner. 1925—418.
Railroad Electrification—Economies of Steel Plant—O Needham and David C. Hershberger. 1926—263.
Railroads—Discussion of Electrification of Plant—Walter Greenwood. 1926—184.
Railroads—Electrification of the Steel Plant—R. B. Gerhardt. 1921—535.
Railroad Yard—Some Considerations in the Electrification of the Steel Plant—R. B. Gerhardt. 1922—455.
Rail Mills—D. W. Blakeslee. 1926—163.
Railways—Electrification of Industrial Plant—D. M. Petty. 1922—153.
Rates—Central Station Power—E. C. Stone and G. M. Gadsby. 1919—223.
Reactances—Current Limiting—R. H. Keil. 1920—481.
Recent Developments in Power Generating Apparatus—P. M. Lincoln. 1915—45.
Recorder—Graphic—for Steel Mill Service—H. W. Young. 1910—63.
Records—The Value of—to an Operating Engineer—Ray S. Huey. 1916—343.
Rectifiers—Power—J. H. Milliken. 1921—645.
Recuperator—The Chapman-Stein—Wm. C. Buell, Jr. 1924—393.
Refractories for Use in Steel Plants—M. C. Booze. 1926—284.
Refractory Problems—By-Product Coke Plant—Martin J. Conway. 1926—292.
Regulator or Rheostat—The Liquid Slip—D. M. Petty. 1923—485.
Regulators—Pressure—at the Inland Steel Co.—C. J. Smith. 1925—424.
Regulators—Slip—vs. Notchbacks—Gordon Gage. 1920—653.
Relation of Physical Examination to Electrical Work—Stewart C. Coey. 1915—319.
Reminiscences of Niagara—Paul M. Lincoln. 1916—484.
Renewal Parts and Renewal Part Records—William S Shirk. 1926—466.
Repair and Depreciation of Electrical Apparatus—G. E. Stoltz. 1915—341.
Resistance Grid—Interlocking Systems—Controlling Apparatus at Gary—C. T. Henderson. 1908 Paper 8.
Resistance Materials—Electrical—Walter Kennedy. 1921—241.
Reversing Mills—Electrically Driven—Wilfred Sykes. 1914—667.
Rheostats—Liquid—for Industrial Purposes—Wilfred Sykes. 1910—30.
Rod Mills—Orientation of Steel—Guernsey H. Cole. 1925—334.
Rod Mill—Remodeled and Electrified—S. N. Roberts. 1925—153.
Roll Drives—Main—Factors Involved in the Selection of Direct—Connected and Geared—E. A. Hurme. 1925—189.
Roll Drives—Main—in United States and Canada. 1925—29.
Rolling Mill Drives in Continental Europe—Observations on—O. Needham. 1925—327.
Rolling Mill Practice Obtained by the Use of Direct Current Motors for Main Roll Drive—G. E. Stoltz. 1922—777.
Rolling Mills—Adjustable Speed Drives for—L. A. Umansky. 1924—817.
Rolling Mills—Electric Drives for—D. M. Petty. 1917—361.
Rolling Mills—Electrical Drives for—H. C. Uhl. 1925—322.
Rolling Mills at Steubenville Plant of the Wheeling Steel Corporation—Addition to—M. J. Conway. 1926—239.
Rolling Mills—Cambria Works, Gautier Plant, Bethlehem Steel Company, Johnstown, Pa.—R. H. Stevens. 1926—446.
Rolling Steel in Various Mills—Review of Cost—G. E. Stoltz. 1921—105.
Rolls for Sheet and Tin Mills—Electric Heating of Fnishing—Gordon Fox. 1923—253.
Rotary Converters—Motor-Generators vs.—E. Friedlaender. 1915—57.
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Rotors—Improvements in—J. E. Fries. 1924—61*.
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Rules for the Safe Operation of Electric Overhead Traveling Cranes—A. I. & S. E. E. Recommendations. 1926—345.
Rules for the Safe Operation of E. O. T. Cranes—Discussion. 1926—362.

S

Safe Crane Operators Physical and Mental Requirements—Charles M. Swindler. 1926—403.
Safe Operation of Electric Overhead Traveling Cranes—Membership. 1926—183.
Safe Operation of Electric Overhead Traveling Cranes—Rules for the—A. I. & S. E. E. Recommendations. 1926—345.
Safeguarding Electrical Equipment—Walter Greenwood. 1917—253.
Safety—Appointment of Safety Committee 1908.
Safety—Committee. 1922—631.
Safety—Committee. 1921—597.
Safety in the Design of Standard Apparatus—Consideration of—C. Pirtle. 1910—22.
Safety Engineer—Electrical Engineer—can be Mutually Helpful—John A. Oartel. 1925—354.
Safety—Good Order as an Essential for—J. A. Voss. 1926—376.
Safety—Installation of Electrical Equipment to Comply with Requirements of—Walter Greenwood. 1915—299.
Safety Meeting. 1914—625.
Safety Movement and Accident Prevention—Committee. 1917—45.
Safety Movement in Steel Mills—C. M. Brading and F. A. Wiley. 1919—255.
Safety—Organized—Lew R. Palmer. 1914—447.
Safety Report—Committee. 1909-1911.
Safety Report—Committee. 1910—5.
Safety Rules for Cranemen—Committee. 1911—4.
Safety Rules for Government of Employees Working on Electrical Equipment—Committee. 1919—315.
Safety—Formation of a National Organization for the Promotion of Safety to Human Life. 1912—12.
Safety Rules Relating to employees of Electrical Department—Committee. 1911—16.
Safety Rules—Standard—Committee. 1911—30.
Safety Switches—P. T. Vanderwaart. 1922—801.
Safety Work of the A. I. & S. E. E.—A Review of—W. T. Snyder. 1916—501.
Scale Formation—The Prevention of—by Boiler Water Conditioning—R. E. Hall, Carl Fisher and George W. Smith. 1924—353.
Screwdown—Mechanical and Electrical Analysis of 40-Inch Blooming Mill—F. D. Egan. 1924—487.
Screw-Downs—Control of Mill Tables and—W. C. Kennedy. 1920—223.
Shear Without Clutch—Motor Driven Bloom—D. W. Dean. 1926—338.
Sheet and Tin Mills—A. B. Holcomb. 1920—611.
Ship Yard—The Electrical Features of Hog Island—H. W. Osgood. 1919—33.
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Shop Practice—Developments in Electric Maintenance—Discussion. 1924—579.
Shop Practice—Steel Mill Electrical Repair—A. J. Standing 1920—109.
Shop Practices—Electric Repair—of the Pittsburgh Railways Co.—L. J. King. 1925—100.
Silent Chain Power Transmission—F. L. Morse. 1914—465.

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Skip Hoists and Bell Hoists for Blast Furnaces—Recent Developments of Electric—David L. Lindquist. 1918—43.
Skip Hoist Characteristics—Single Bucket Blast Furnace A. C. Cummins and A. R. Leavitt. 1923—453.
Slagging Producer in Steel Works—K. Huessener. 1924—669.
Slip Regulators vs. Notchbacks—Gordon Gage. 1920—653.
Soaking Pits—Electrically Heated—B. G. Bailey. 1925—111.
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Some Electrical Developments—J. D. Wright. 1924—58.
Speed Control—Some Electrical Problems Practically Considered—B. G. Lamme. 1914—13.
Speed Regulating Equipment—Automatic—for Induction Motors with Flywheels—E. J. Cheney. 1912—115.
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Specifications for A.C. Motors for Main Roll Drive—Committee. 1919—569.
Specifications—Modern Steel Mill Crane—F. D. Egan. 1916—745.
Standardization—Committee. 1908—3.
Standardization—Committee. 1916—567.
Standardization—Committee. 1917—103.
Standardization—Committee. 1918—495.
Standardization—Committee. 1920—539.
Standardization Motors and Transformers. 1913—369-377.
Standardized Commutating Pole Mill Type Motor—Committee. 1926—427.
Starter for D.C. Motors—A. Steel Mill—Pirtle. 1909 Paper 4.
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Steam Extraction in Steel Mill Power Plants—Possibilities in Stage Heating and—H. T. Watts. 1923—105.
Steam Generating Systems—Differential Pressure—Lester P. Barlow. 1925—176.
Steam—Generation of—by Electricity—P. H. Falter. 1923—231.
Steam Generation—Pulverized Firing in—F. J. Crolius. 1921—161.
Steam Generation—Waste Heat Utilization for—G. R. McDermott. 1921—357.
Steam Practice—Improvements in—as Accomplished at Lukens Steel Company—G. D. Spackman. 1923—703.
Steel Conductors for Transmission Lines—H. B. Dwight. 1916—205.
Steel Industry During the Year 1923—Achievements in the—G. E. Stoltz. 1924—35*.
Steel Industry and the Electric Utilities—Merrill Skinner and F. D. Mahoney. 1924—651.
Steel Mill Practice—Foreign—W. H. Burr. 1925—318.
Steel Mill Practice—Foreign—F. L. Estep. 1925—319.
Steel Production and Fuel Consumption—E. Kieft. 1926—471.
Steel Treating and Its Value to the Steel Engineer.—R. F. Crump. 1926—409.
Stokers and Their Recent Developments—T. A. Marsh, F. H. Daniels, F. A. DeBoos, Thos. Peebles, James Harrington, H. F. Lawrence and J. V. Baum. 1922—163.
Stokers and Boilers—Fuel Economy by Co-operation in Establishing a Better Practice in the Operation of—Joseph G. Worker. 1917—465.
Strength of Gear Teeth—E. Kieft. 1926—405.
Strip Steel and Mills for Its Production—Noble Jones. 1926—155.
Structural Mills—D. W. Blakeslee. 1926—164.
Structures for Steel Works—Design of—Charles A. Randorf. 1916—427.
Sub-Stations—Automatic and Remote Controlled—as Applied to Steel Mills—J. K. Ostrander. 1922—365.
Sub-Station—Outdoor—Practice and Use of Carbon Tetrachloride Fuses—Alfred Alsaker. 1919—55.
Sub-Station—Remote Controlled—W. T. Snyder. 1918—479.
Switch—The Freret Safety Enclosed Knife—A. L. Freret. 1924—444*.
Switchboards—Automatic—R. F. Wensley. 1924—1*.
Switchboard and Switching for Steel Mills—Saul Lavine. 1914—133.
Switching Devices for Power Circuits—Recent Development in—J. N. Mahoney. 1913—77.
Synchronous Condenser Installation for Power Factor Correction and Voltage Regulation—W. O. Oschmann. 1914—109.
Synchronous Motor Applications—James F. Burke. 1925—159.
Synchronous Motor—The Super—H. C. Uhl. 1925—336.
Systematizing the Work of an Electrical Engineering Division—P. T. Vanderwaart. 1923—553.

T

Table Drives—A.C. vs. D. C. for Rolling Mill—W. S. Hall. 1919—419.
Tables and Screw-Downs—Control of Mill—W. C. Kennedy. 1920—223.
Tata Iron Works at Jamshedpur, India—Electrification of—S. Ghosh. 1924—545.
Telephones in the Steel Industry—Automatic—S. Suekoff. 1915—419.
Temperature Applications—Medium and Low—E. A. Hurme. 1924—771.
Test of Susquehanna Station, Metropolitan Power Co.—Design and—J. A. Powell. 1926—167.
Tests of Arc Welded Structural Steel—A. M. Candy and G. D. Fish. 1926—380.
Tin Mills—Sheet and—A. B. Holcomb. 1920—611.
Tonnage—The Electrical Reversing Mill Considered from the Standopint of—K. A. Pauly. 1920—415.
Tools—Portable Electric—as Applied to Iron and Steel Industry—A. M. Andresen. 1916—447.
Transformers—Standardization Meeting. 1913—377.
Transformers—Care and Operation of Power—J. G. Corrin. 1922—23.
Transformer Construction for Steel Mills—Power—G. A. Waters. 1914—391.
Transformers for Steel Mill Service—H. C. Soule. 1911—46.
Transmission—Committee. 1922—621.
Transmission and Distribution of Power in Industrial Plants—D. M. Petty. 1920—309.
Transmission Lines—Steel Conductors for—H. B. Dwight. 1916—205.
Transmission—Power—H. B. Vincent. 1919—135.
Transmission—Power—in Industrial Plants—K. M. Raynor 1922—1.
Transmission—Silent Chain Power—F. L. Morse. 1914—465.
Transmission in a Steel Plant—Underground—F. D. Egan. 1914—295.
Transmission—Underground—A. L. Freret. 1920—327.
Transportation—Electric—F. O. Schnure. 1923—335.
Transportation—Yard Switching and Mill—W. B. Potter and G. H. Shapter. 1926—259.
Truck and Tractor—Electric Industrial—Equipment is Effecting Savings in the Iron and Steel Industry—Harold J. Payne. 1926—274.
Tube Mills—D. W. Blakeslee. 1926—147.
Turbine Equipment—Improving Non-Condensing Power Plant by Use of Direct Current, Mixed Pressure—R. F. Patterson. 1915—153.
Turbine Generating Units—Direct Current—H. A. Rapelye. 1913—51.
Turbine—Mixed Pressure Steam—with Special Reference to the Use of the Steam Regenerator—E. D. Dickinson. 1912—43.
Turbine Operations—Steam—L. W. Heller. 1922—673.
Turbines—Mixed Flow—M. I. Nisim. 1916—601.
Turbines—Low Pressure—In Steel Plants—R. C. Muir. 1909 Paper 9.
Turbines—Steam—Howell Van Blarcom. 1907 Paper 15.

Turbines—Steam—in Iron and Steel Plants—R. C. Muir. 1910—56.
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U

Unaflow Engine—W. Trinks. 1916—139.
Underground Cables and Accessories—J. C. Bowman. 1914—317.
Underground Distribution Systems—G. J. Newton, 1916—171.
Underground Transmission in a Steel Plant—F. D. Egan. 1914—295.

V

Valve Control for Hydraulic Pumps—Holveck Synchronized Suction—J. E. Holveck. 1924—97*.

W

Watthour and Ampere-Hour Meters and their Applications in Steel Mills—R. C. Lamphier. 1914—419.
Welded Structural Steel—Tests of Arc—A. M. Candy and G. D. Fish. 1926—380.
Welding Arc—J. F. Lincoln. 1912—133.
Welding Arc—Cutting Steel Mill Maintenance Costs with the—A. M. Candy. 1915—122.
Welding—Electric Arc—H. L. Unland. 1918—239.
Welding—Pipe Line Arc—R. R. Applegate. 1925—125.
Welding—Arc—Present Status in the Iron and Steel Industry—Joint Paper. 1919—603.
Welding—Arc—Some Recent Investigations in—O. H. Escholz. 1917—697.
Welding—Autogenous—Steel Plant Maintenance by—Walter Petry. 1921—679.
Welding—Electric Arc—In the Steel Industry—W. L. Warner. 1925—115.
Welding Machines—Electric—Frank Warren. 1912—140.
Welding—Recovering Armature Shafts with Arc—T. C. Dawson. 1925—187.
Welding—Spot—G. A. Hughes. 1924—597.
Welding—Thermit—H. D. Kelly. 1925—119.
Welds—Two Methods for Producing Ductile—1926—150.
Wheels—Crane Track—W. T. Snyder. 1911—72.
Windings of Electric Machines—H. C. Spect. 1912—269.
Wire Rope Problems—A Discussion of Present Day—James F. Howe. 1925—311.
Wire Rope and its Relation to Steel Making—James F. Howe. 1915—113.

Y

Yard Electrification—Discussion on Steel Mill—David C. Hershberger. 1926—378.
Yard Switching and Mill Transportation—W. B. Potter and G. H. Shapter. 1926—259.

List of Curves, Tables and Charts

A

Accidents—Classification of—C. L. Close. 1926—400.
Accidents—Fatal—Statistics—Walter Greenwood. 1920—299.
Air Circulation—Effects on Heat Losses—L. M. McMillan. 1925—303.

B

Babbitt—A. S. T. M. Specifications B 23-18 T—T. D. Lynch. 1920—162.
Babbitt Hardness-Temperature Data—J. S. Unger. 1920—175.
Bearings—Ball or Roller—Dimensions of Races for Motors up to 150 H-p.—D. M. Petty. 1923—503.
Bearings—Standardized Mill Motor—Committee. 1926—431
Bearing Losses—A. M. McCutcheon. 1921—429.
Blast Furnace Burden per Iron Ton—H. C. Seibert. 1923—672.
Blast Furnace Data—F. W. Davis. 1924—433.
Blast Furnace Gas Engine Drive—H. C. Seibert. 1923—679.
Blast Furnace Gas Steam Generation—H. C. Seibert. 1923—675.
Blast Furnace Heat Data—O. C. Callow. 1926—242.
Blast Furnace Operating Energy—Frank W. Cramer. 1925—235.
Blast Furnace and Steel Mill Heat Balance—Brent Wiley. 1917—328.
Blast Furnace Stove Gas Analysis—K. Huessener. 1923—692.
Blast Furnace Wind and Gas Balance—E. Kieft. 1923—696.
Blooming Mill Data—W. Dudley. 1920—75.
Blooming Mill Drive Cost Data—C. H. Hunt. 1924—553.
Blooming Mill—Electrical—Cost Data—Wright, Davis and Needham. 1924—543.
Blooming Mill Engine Curves—H. C. Seibert. 1920—41.
Blooming Mill Engine Test Results—D. E. Eppelsheimer. 1920—51.
Bloom Mill H-P—R. P. M. Curves—F. B. Crosby. 1916—334.
Bloom Mill Torque—R. P. M. Curves—F. B. Crosby. 1916—335.
Bloom Mill—Ilgner Set Efficiency Curves—E. S. Jefferies. 1916—311.
Bloom Mill—Kilowatt-hours per Ton—E. S. Jefferies. 1916—312.
Blooming Mill Motor Sizes—G. E. Stoltz. 1920—66.
Blooming Mill Operating Costs—E. S. Jefferies. 1920—58
Blooming Mill Power Consumption—G. E. Stoltz. 1921—108.
Blooming Mill Power Costs—H. E. Seibert. 1920—45.
Blooming Mill Power Curves—H. E. Seibert. 1920—39.
Blooming Mill Reversing—Data—E. S. Jefferies. 1920—282.
Blooming Mill—Reversing—Equipment Installation—E. S. Jefferies. 1916—318.
Blooming Mill Steam and Elongation—L. A. Umansky 1926—391.
Blooming Mill Torque and Speeds—Wright, Davis and Needham. 1924—515.
Boiler Efficiency—Walter N. Flanagan. 1921—297.
Boiler Efficiency—W. W. Pettibone. 1922—60.
Boiler Efficiency—1500 H-P., B. & W.—Richard H. Rice. 1917—494.
Boiler Plant Efficiency Curves—Joseph G. Worker. 1925—396.
Boiler Plant Performance—Susquehanna Station—J. A. Powell. 1926—171.
Boiler Output Relationship to Fuel and Air—S. G. Bailey. 1924—716.
Boiler Performance—W. W. Pettibone. 1922—59.
Boiler Scale—Temperature Effect—Hall, Fischer and Smith. 1924—363.
Brakes—Magnetic—Friction Area—Torque—B. E. Fernow. 1914—614.
Brakes—Magnetic—Weight-Torque; Solenoid Work-Torque—B. E. Fernow, Jr. 1914—612.
Brushes—Carbon—Ringsdorf—Wm. D. Stevenson. 1913—29.
Brushes—Graphite—Wm. D. Stevenson. 1913—30.
Brushes—Metal—Wm. D. Stevenson. 1913—30.

C

Cable Curves—A. L. Freret. 1919—212.
Capacity Tonnages Various Furnaces. 1926—482.
Carbon Brush Resistances—E. H. Martindale. 1917—408.
Central Station Energy Charges—E. C. Stone. 1919—226.
Central Station Power Rates—G. M. Gadsby. 1919—238.
Central Station Power Rates for Steel Mills—Committee. 1916—29.
Classification of Accidents—Charles L. Close. 1926—400.
Coal Characteristics—Test of—Susquehanna Station—J. A. Powell. 1926—170.
Coal—Composition of—A. G. Witting. 1922—507.
Coal Consumption of Utility Plants—G. E. Stoltz. 1926—395.
Coal Used; 1917-1921—H. C. Seibert. 1923—662.
Combustion Chemical Reactions—A. G. Witting. 1922—498.
Combustion Control—E. G. Bailey. 1924—711.
Combustion Data; 15 Generating Stations—Joseph G. Worker. 1925—398.
Combustion Temperature—Theoretical—H. S. Watts. 1922—105.
Control Characteristics—Magnetic; Acceleration Curves—H. F. Stratton. 1914—232.

Control Characteristics—Magnetic; Current Curves—H. F. Stratton. 1914—229.
Control Characteristics—Magnetic—Currents in Motor Circuits—H. F. Stratton. 1914—230.
Control Characteristics—Magnetic; Current Operating Magnetic Switch—H. F. Stratton. 1914—213.
Control Characteristics—Magnetic; Shunt Motor Current—H. F. Stratton. 1914—231.
Control Characteristics—Magnetic; Series Motor Characteristics—H. F. Stratton. 1914—218.
Control Characteristics—Magnetic; Series-Shunt Motor Characteristics—H. F. Stratton. 1914—219.
Control Characteristics—Magnetic; Time Element, Continuous and Intermittent Switches—H. F. Stratton. 1914—215.
Control Curves—Drum Type and Automatic Controllers—D. M. Petty. 1915—235-236-237-239.
Control Curves—Drum Type and Automatic Controllers—Paul Caldwell. 1915—248-251-252-255.
Control—Efficiency of Ward Leonard—Variable Speed Drives for Main Rolls of Steel Mills—K. A. Pauly. 1913—276.
Control—Induction Motor; Energy Stored in Flywheel—Wilfred Sykes. 1914—366.
Control—Induction Motor; Torque—Main Drive—Wilfred Sykes. 1914—365.
Control—Slip Regulators vs. Notchbacks, 3 curves shown in connection with operation of 1500 HP motor—Gordon Gage. 1920—654-659-661.
Control Systems—Efficiency of—Variable Speed Drives for Main Rolls for Steel Mills—K. A. Pauly. 1913—275.
Condenser Performance, Susquehanna Station—J. A. Powell. 1926—173.
Condensers—Shop Tests—Mr. Yawger. 1909 Paper 11.
Condenser—Static—Costs—R. W. Dudley. 1926—258.
Condenser—Static and Synchronous—Advantages—R. W. Dudley. 1926—248.
Condensers and their Auxiliaries: Pump Characteristics; Leblanc and Reciprocating—R. N. Ehrart. 1914—548.
Condensers; Comparison of Types—T. E. Keating. 1920—463.
Condensing Water per Pound of Exhaust Steam—D. D. Pendelton. 1918—385.
Cooling Time of Iron and Steel—E. Kieft. 1926—474.
Costs—A.C. vs. D.C. Systems in Steel Plants—B. R. Shover and Edward J. Cheney. 1911—101 to 113 inc.
Costs—Automatic Substation—J. K. Ostrander. 1922—377.
Cost—Blooming Mill—per Ton—E. S. Jefferies. 1916—312.
Costs—Electric Furnace—R. S. Wile. 1915—398.
Costs—Energy—Coal—D. M. Petty. 1921—206.
Costs—Energy—Load Factor—D. M. Petty. 1921—205.
Costs—Foundry Furnace—L. W. Egan. 1926—329.
Costs—Gas Engine Power Station—D. M. Petty. 1922—662.
Costs—Generation by Blast Furnace Gas—D. M. Petty. 1921—201.
Costs—Installation; Electric Power Station for Auxiliary Motors—Brent Wiley. 1913—198.
Costs—Installation: Steam Engine Drive—40-inch Blooming Mill, Reversing; Bar Mill; 72-inch Plate Mill; Jobbing Mill—Brent Wiley. 1913—198.
Costs—Locomotive—Steam and Electric—R. B. Gerhardt. 1921—548.
Costs—Operation—Electric Power Plant for Auxiliary Motors—Brent Wiley. 1913—201.
Costs—Operation of Gas Engine Power Plant—D. M. Petty. 1922—667.
Costs—Operation—Steam Engine Drive on Main Rolls—Brent Wiley. 1913—198.
Costs—Oxygen and Hydrogen Production—I. H. Levin. 1923—164.
Costs—Plant Installment Costs—E. D. Dreyfus. Curve 1911 Page 147 and 151.
Costs—Rolling Steel—Electrical and Steam—G. E. Stoltz. 1921—115.
Costs—Rolling Steel—Main Drive—G. E. Stoltz. 1921—110.
Costs—Steam Generating Equipment—F. J. Crolius. 1921—173.
Costs—Steel Making—F. Von Schlegell. 1921—97.
Costs—Turbo Generators, Motor Generators, Transformers, High Voltage Motors for Mill Drive, 25 and 60 cycle—B. R. Shover. 1925—211.
Current Values—Crane Motor—Paul Caldwell. 1916—236.
Crane Ratings—E. S. Lammers. 1920—541.
Crane Ropes—James F. Howe. 1925—314.
Crane Trolley Track Gauges—Committee. 1920—541.
Cranes—Comparison between two 10-Ton—E. S. Lammers. 1920—543.
Cranes—Peak Rate of Acceleration of Bridge before Suspended Load Starts—R. H. McLain. 1918—350.

D

Dimensions—Standardized Mill Motor—Committee. 1926—433.
Duct Costs—Underground Distribution—Wm. D. Ligon. 1912—306.

E

Electricity Produced by Utility Plants—G. E. Stoltz. 1926—395.
Elevators—Steel Mill—Costs—R. B. Gerhardt. 1919—90.
Engine—Compound Corliss—and Low Pressure Turbine Water Rates—Brent Wiley. 1913—193.
Engines—Gas—Curve, Thermal Efficiency—W. E. Sykes. 1912—98. Curve, Thermal Efficiency using Producer Gas. 99.
Engines—Starting Torque of Rolling Mill—M. J. Conway. 1926—250.

F

Factors Determining Size of Motor and Characteristics Required for Main Rolls, Steel Mills—Brent Wiley and Wilfred Sykes. 1915—185.
Fan—Pressure Volume Characteristics—W. N. Flanagan. 1921—291.
Flow Factors—Fluids in Pipes—J. M. Spitzglass. 1924—340.
Flywheel Energy—Rolling Mill—L. A. Umansky. 1925—498.
Flywheel Energy and Speed Relationships—Wright, Davis and Needham. 1924—522.
Flywheel Set Energy Curve—G. E. Stoltz. 1917—723.
Flywheel Set Windage Friction—G. E. Stoltz. 1917—725.
Foundry Furnace Costs—L. W. Egan. 1926—329.
Foundry Furnace Operation—3 Ton—L. W. Egan. 1926—327.
Furnace Capacity and Various Temperatures—H. S. Watts. 1922—121.
Furnace Costs—Foundry—L. W. Egan. 1926—329.
Furnace Covers—Costs—R. B. Gerhardt. 1919—90.
Furnaces—Electric—in use in 1909—E. W. Yearsley. 1909—28, Paper 1.
Furnace—Electric—Data—Committee. 1919—481.
Furnace—Electric—Cooling Water Data—E. T. Moore. 1923—615.
Furnace—Electric—Operating Characteristics—Walter C. Kennedy. 1917—290.
Furnace—Electric—Operating Data—J. A. Seede. 1925—374.
Furnace—Electric—Operation—Edward T. Moore. 1923—573.
Furnace Electrode Data—E. T. Moore. 1920—515.
Furnace Operation—3 Ton Foundry—L. W. Egan. 1926—327.
Furnace Temperature Curves—E. A. Hurme. 1924—771.
Furnace Temperatures—Foundry Moulding—E. A. Hurme. 1925—360.
Fynn-Weichsel Motor—Characteristics—H. Weichsel. 1924—51.
Fynn-Weichsel Motor—Test Performance—H. E. Dyche. 1924—75.

G

Gas Burner Diagram and Equations—H. S. Watts. 1922—113.
Gas Ignition Temperature Range—G. C. Emmons. 1925—284.
Gas from Indiana Coal—A. G. Witting. 1922—507.
Gas Producer Experimental Results—G. R. McDermott. 1925—269.
Gases—Analysis of Typical—H. S. Watts. 1922—98.
Gear Ratio Data—Motor Drive—J. E. Fries. 1919—675.
Gear Ratios for Blooming Mill Motor Drives—R. H. Keil. 1919—689.
Generating Capacity Actually Installed with Connected Load—Committee. 1916—38.
Generating Field Characteristics—E. S. Lammers, Jr. 1920—145.

H

Heat Available with Perfect Combustion of Fuel Gasses—H. S. Watts. 1922—109.

Heat Balance—H. C. Seibert. 1923—667.
Heat Balance—Blast Furnace and Steel Mill—Brent Wiley. 1917—328.
Heat Balance—Gas Producer—G. R. McDermott. 1925—269.
Heat Balance of Hot Blast Stove—L. B. McMillan. 1925—306.
Heat Consumption—Turbine Plants—Richard H. Rice. 1917—487.
Heat Insulation—Paints as—A. W. Steed. 1925—307.
Heat Losses—L. B. McMillan. 1925—301.
Heat and Power: Consumption per Ton of Steel Rolled. Relation to Elongation—Wright, Davis and Needham. 1924—530.
Heat Transmission Rates—W. M. Hepburn. 1923—538.
Heating and Cooling Temperature Curves of Iron—E. A. Hurme. 1925—357.
Heating Costs, Gas and Electric Soaking Pits—B. G. Bailey. 1925—135.
Hoists—Furnace Door—Costs—R. B. Gerhardt. 1919—89.
Hoist Machine—Gearless—Characteristics—David L. Lindquist. 1918—51.
Horse-power—Primary and Motor—Four Industries, 1904-1914—Brent Wiley and Wilfred Sykes. 1915—177.
Hysteresis and Eddy Current Losses—J. E. Fries. 1913—544.

I

Illumination—Artificial—in Foundies. 1926—179.
Illumination Intensities—Ward Harrison. 1920—574.
Illumination Practice in Steel Mills—Ward Harrison and H. H. Magdsick. 1913—250.
Illumination in Steel Mills—Connected Lighting Load and —Changes—1911-1913—Ward Harrison and H. H. Magdsick. 1913—249.
Illumination Test—Horizontal Distribution—750 Watt Nitrogen Tungsten Lamp—Allen T. Baldwin. 1914—505.
Insulation (Heat) Economical Thickness—L. B. McMillan. 1925—305.
Insulator Deposits Causing Breakdown—Committee. 1922—623.
Iron and Steel Produced 1890-1914—Carl George Frank. 1915—107.

J

Jack Shaft Dia.—Torque Curves; Mill Motors—Committee. 1926—432.

K

Kilowatt-hours per Ton—Blooming Mill—E. S. Jefferies. 1916—315.
Kraemer Set Efficiencies and Power Factors—R. W. Davis. 1923—655.

L

Locomotive Costs—O. Needham and David C. Hershberger. 1926—270.
Locomotive Data—Frank E. Ficher. 1924—913.
Locomotive Service Tests—O. Needham and David C. Hershberger. 1926—266.
Losses Incurred in Distributing Central Station Power from Receiving Station to Plant Feeder Station Bus Bar—Committee. 1916—44.
Lamps—Cleaning—Ward Harrison. 1920—570.
Lamp in the Iron and Steel Industry—The Flaming Arc. Illumination Test—Horizontal Distribution from D.C. Long Burning Flame Arc Lamp—Allen T. Baldwin. 1914—507.
Lamps—Mercury-Vapor Quartz. Classes of Work and Relative Consumption—W. A. D. Evans. 1913—160.
Lamps—Mercury-Vapor Quartz. Hemispherical Candle-Power Curves—W. A. D. Evans. 1913—158.
Lamps—Mercury-Vapor Quartz. Horizontal Illumination derived from a 220-Volt Quartz Lamp—W. A. D. Evans. 1913—162.
Lamps—Mercury-Vapor Quartz. Starting Characteristics of Burners With and Without Globe—W. A. D. Evans. 1913—153.
Lamps—Mercury-Vapor Quartz. Time Curve of 220-Volt Lamp With Globe—W. A. D. Evans. 1913—151.
Lamps—Mercury-Vapor Quartz. Time Curve of 220-Volt Lamp With Globe Removed—W. A. D. Evans. 1913—152.
Lamps—Mercury-Vapor Quartz. Time Curve of 220-Volt Lamp with Globe on Set for Max. Burner Voltage of 140 Volts—W. A. D. Evans. 1913—153.
Lamps—Mercury-Vapor Quartz. Variation of Efficiency with Respect to Pressure of Vapor—W. A. D. Evans. 1913—146.
Lamps—Mercury-Vapor Quartz. Variation of Candle-Power on Quartz Burner with Respect to Current—W. A. D. Evans. 1913—157.
Lamps—Mercury-Vapor Quartz. Variation of Candle-Power on Quartz Lamp with Respect to Burner Voltage—W. A. D. Evans. 1913—157.
Lamps—Mercury-Vapor Quartz. Volt-Ampere Characteristics 21-Inch Tube—W. A. D. Evans. 1913—146.
Length-Hp. Curves; Mill Motors—Committee. 1926—434.
Lifting Table—Blooming Mill—Costs—R. B. Gerhardt. 1919—93.
Lighting Equipment in Steel Plants—Analysis of—Ward Harrison and H. H. Magdsick. 1913—243.
Lighting Equipment in Steel Plants—Summary of—Ward Harrison and H. H. Magdsick. 1913—244.
Lighting Equipment in Steel Mills; Trend Indicated 1911-1913—Ward Harrison and H. H. Magdsick. 1913—245.
Lighting Load and Illumination in Steel Mills. Changes 1911-13—Ward Harrison and H. H. Magdsick. 1913—249.
Lighting of Steel Plants—Supplimentary Data on—Ward Harrison and H. H. Magdsick. 1913—247.

M

Main Roll Drives—Committee. 1923—524.
Manipulator—Blooming Mill—Costs—R. B. Gerhardt. 1919—91.
Maximum Plugging Current Permissible at Various Speeds of Motors—G. E. Stoltz. 1916-125.
Medical Inspection of 3536 Employees: Distribution of Physical Defects—Dr. Sidney McCurdy. 1915—325.
Metals—Physical Properties—J. S. Unger. 1920—173.
Meters—Correction Curve for Republic Flow—M. J. Conway. 1926—256.
Mill—Blooming—Reversing—Heat Units per Ton for Various Drives—Brent Wiley. 1913—195.
Mill Drive Data—E. S. Jefferies. 1920—387.
Mill Drive Data—E. A. Hurme. 1925—204.
Mill Drive Data—Total HP of Geared Roped, Chain and Belt Connected Drives, 47 curves and 11 tables—E. A. Hurme. 1925—190 to 210 inc.
Mills—Reversing—Electrically Operated—In Europe, U. S. and Canada—Brent Wiley. 1913—175.
Mills—Motor Driven—Non-Reversing—In Europe. Partial List—Brent Wiley. 1913—189.
Mills—Motor Operated; United States and Canada, Jan 1914—Brent Wiley. 1914—193.
Mills—Plate—Electrically Driven—G. E. Stoltz. 1918—589.
Mills—Power Installations in United States Using By-Product Gas—Brent Wiley. 1913—205.
Mill—Reversing—Characteristics—L. A. Umansky. 1925—480.
Mills—Reversing, Speed Curve, Steam Driven Reversing Mill. 1912—85. Steam Curve, Steam Consumption. Triple Tandem Compound Engine—W. E. Sykes. 1912—86. Curve, Steam Consumption, Twin Tandem Compound Engine. 1912—87. Curve, Steam Consumption, Compound Corliss Engine. 1912—89. Curve, Indicating Speed Torque and Power Characteristics of a Compound Engine. 1912—91. Curve, Showing Steam Consumption per ton of Steel, Compound Condensing Engine. 1912—92. Table, Showing Test on Boiler with Blast Furnace Gas Firing. 1912—94.
Mill Speed—Reversing Blooming—L. A. Umansky. 1925—489.
Mill—Structural—Power-Output Curve—D. W. Blakeslee. 1926—166.
Motor—A.C.—Performance and Starting Torque Curves—David L. Lindquist. 1918—55.
Motor—A.C.—Speed-Torque Characteristics—D. L. Lindquist. 1918—69.
Motor Back Axle Bearing Sizes; Crane Specifications—F. D. Egan. 1916—749.
Motor Capacity for Lifting Table—J. J. Booth. 1919—687.
Motor Characteristic Curves—W. S. Hall. 1919—420.
Motor Characteristic Curves; Armature Shunt and Series Resistance—H. D. James and F. J. Burd. 1917—18.
Motor Efficiency Curves—D. M. Petty. 1916—720.
Motor Efficiency—Load Factor Curves—D. M. Petty. 1916—725.
Motor Efficiency and Power Factor—Mill Drive—J. D. Wright. 1916—703.

Motor Horse-power Rate of Application to Main Rolls, Steel Mills—Brent Wiley and Wilfred Sykes. 1915—182.
Motor—5,000 H-p. Induction—Test Curves—G. E. Stoltz. 1918—584.
Motor—Fynn-Weichsel Induction—Characteristics. 1924—51.
Motor—Fynn-Weichsel Induction—Test Performance—H. E. Dyche. 1924—74.
Motor — Induction — Speed-Torque and Speed-Current Curves—H. F. Stratton. 1917—198.
Motor Installations—Proportional Costs—W. S. Hall. 1919—423.
Motor Lead Wire Sizes; Crane Specifications—F. D. Egan. 1916—750.
Motor—Mill—Dimensions—Committee. 1917—579.
Motor—Mill Roll—Speed-Torque Curves—K. A. Pauley. 1920—419.
Motor Speed Characteristics, Adjustable Speed, Compound Wound D.C.—M. A. Whiting. 1913—38.
Motor Speed Characteristics, Series—M. A. Whiting. 1913—44.
Motor Speed Characteristics of Series in Multiple Mechanically Connected with Seperate Sets of Reversing Connections—M. A. Whiting. 1913—41.
Motor Speed Characteristics of Shunt in Multiple Mechanically Connected—M. A. Whiting. 1913—39.
Motor Speed Control; Size of Set—J. D. Wright. 1926—702.
Motor Speed-Current Curves—H. F. Stratton. 1916—657.
Motor Speed Curve—D. M. Petty. 1916—719.
Motor—Speed Curves of Shunt—M. A. Whiting. 1913—43.
Motor Speed-Time Curves—E. S. Lammers, Jr. 1920—147.
Motor—Speed-Torque Curves of Induction—with D.C. Excitation—M. A. Whiting. 1913—47.
Motor—Standardized Mill—Bearings—Committee. 1926—431.
Motor—Standardized Mill—Dimensions—Committee. 1926—433.
Motor—Standardized Mill—Speed-Hp. Curves—Committee. 1926—428.
Motor for Structural Mill—D. W. Blakeslee. 1926—166.
Motor Torque Curves—D. M. Petty. 1916—722.
Motor—Typical Speed-Torque Curves of Induction—with Phase Wound Secondary and 7-Point Current Limit Control—M. A. Whiting. 1913—45.
Motors—A.C. vs. D.C.—Costs and Efficiencies—B. R. Shover and Edward J. Cheney. 1911—101.
Motors—Control Characteristics of Induction—for Mine Hoists—M. A. Whiting. 1913—47.
Motors: Drives for Main Rolls Installed or Under Construction—Brent Wiley. 1913—173.
Motors: Drives for Main Rolls 300 Hp. and Larger, Installed or Under Construction—Brent Wiley. 1913—174.
Motors—Mill—Jack Shaft Dia.-Torque Curves—Committee. 1926—432.
Motors—Mill—Length-Hp. Curves—Committee. 1926—434.
Motors—Mill—Pinion Face-Hp. Curves—Committee. 1926—432.
Motors—Mill—Ratings—Committee. 1926—429.
Motors—Mill—Size-Hp. Curves—Committee. 1926—430.
Motors—Mill—Speed-Hp. Curves—Committee. 1926—430.
Motors—Mill—Width-Hp. Curves—Committee. 1926—435.
Motors for Rail Mill—D. W. Blakeslee. 1926—166.
Motors on Skip Hoists—Curves—H. D. James and F. J. Burd. 1917—22.
Motors for Strip Mills—Noble Jones. 1926—159.
Motors for Tube Mills—D. W. Blakeslee. 1926—149.
Motors—Two 100 Hp.—in Series; Characteristics—J. E. Fries. 1919—673.

O

Oil, Electric and Steam Locomotive Costs. 1926—152.
Oil Switch—Determination of Size of—M. J. Wohlgemuth and E. K. Read. 1925—398.
Oil in Turbines—L. W. Heller. 1922—686.
Open Hearth Electrical Equipment—R. B. Gerhardt. 1920—86.
Oxygen Produced 1909-22—I. H. Levin. 1923—160.

P

Physical Defects—Distribution of—Medical Inspection of 3536 Employees—Dr. Sidney McCurdy. 1915—335.
Pinion Face-Hp. Curves; Mill Motors—Committee. 1926—432.
Pipe Size Factors (D2)—J. M. Spitzglass. 1924—338.
Plate Mill Reversing Drives—E. S. Jefferies. 1920—283.
Pole Costs—Robert A. Cummings. 1912—355.
Poles—Tubular—W. T. Snyder. 1912—325.
Power Consumption—Rolling Steel, Blooming Mills, Continuous Mills, Slabbing Mills, Sheet and Tin Mills, 7 curves—R. B. Gerhardt. 1920—89-90-91-93-96.
Power Costs in England—Brent Wiley. 1908 Paper 7.
Power-Elongation Curve for Rolling Steel—D. W. Blakeslee. 1925—509.
Power Factor; Effect on Generator—R. A. McCarty. 1913—26.
Power Factor—Explanation of—James F. Burke. 1925—162.
Power Factor—Horsepower; Synchronous Motors—E. A. Hurme. 1925—192.
Power Increase with Temperature Decrease of Metal During Rolling—G. E. Stoltz. 1922—784.
Power Required to Deform Steel of Different Temperatures—M. J. Conway. 1926—258.
Power Required to Roll Steel—L. A. Umansky. 1925—486.
Power Required to Roll Steel, 9 charts 1 table—H. C. Seibert. 1920—35 to 48 inc.
Power Required for Yard Switching—W. B. Potter and G. H. Shapter. 1926—259.
Power Required to Roll Steel—Curve—W. E. Sykes. 1912—109.
Power Requirement; Typical Steel Plant Load—Committee. 1916—39.
Power Requirements—Merchant Mills—Committee. 1926—31.
Power Statistics, Iron and Steel Industry—Barton R. Shover. 1924—639.
Preheater Costs—J. G. Worker. 1925—469.
Pump—Centrifugal—Speed-Torque Curves—B. A. Cornwell. 1923—310.
Pump—Centrifugal—Test Curves—B. A. Cornwell. 1923—311.
Pump—Centrifugal—Efficiency Curves—B. A. Cornwell. 1923—312.
Pump—Centrifugal—Test Curves—D. D. Pendelton. 1918—398.
Pump Torques—G. E. Stoltz. 1922—266.
Pumping Costs—B. A. Cornwell. 1923—216.
Purchased Power—Names of Steel Companies Using—Committee. 1916—41.
Purchased Power—Steel Companies Using—Brent Wiley and Wilfred Sykes. 1915—185.

R

Rail Curve Data—Frank E. Fisher. 1924—916.
Rail Mill Auxiliary Motors—D. W. Blakeslee. 1926—166.
Rail Mill Power—Elongation Curve—D. W. Blakeslee. 1926—164.
Railroad Electrification Costs—F. O. Schnure. 1923—338.
Rates—Central Station Power—for Steel Mills—Committee. 1916—29.
Ratings; Mill Motors—Committee. 1926—429.
Reactor Characteristics—E. T. Moore. 1920—509.
Reactance-Power Factor Relationship—E. T. Moore. 1920—507.
Records—Forms—Repair and Depreciation—G. E. Stoltz. 1915—345-346-347-348.
Refractories for By-Product Coke Ovens—M. J. Conway. 1926—293.
Regulation—Voltage—Transmission Line—G. E. Stoltz. 1922—264.
Relay—Characteristics of Shunt Operated—Millard C. Spencer. 1921—282.
Resistance Curves—Steel Cable—H. B. Dwight. 1916—206.
Resistance Materials—Walter Kennedy. 1921—241.
Reversing Mills—Electrically Driven—Kwh-Ton; Tons-Hr.—Wilfred Sykes. 1914—672.
Reversing Mills—Electrically Driven—Power Requirements—Wilfred Sykes. 1914—673.
Roll Temperatures—Electric Heated—E. A. Hurme. 1924—771.
Roll Temperatures—Sheet—Gordon Fox. 1923—264.
Rolling Mill Test Data—M. J. Conway. 1926—257.
Ropes for Cranes—James F. Howe. 1925—314.

S

Scherbius Set Efficiencies and Power Factors—R. W. Davis. 1923—651.
Scherbius Set—Saving Due to—Mine Fan—T. W. Gray. 1922—239.
Screw Down Data—F. D. Egan. 1924—489.

Screw Down Data—Walter C. Kennedy. 1920—226.
Shearing Cycle Oscillographs. Motor Driven Bloom Shear Without Clutch—D. W. Dean. 1926—339.
Shears; Costs—R. B. Gerhardt. 1919—94.
Size-Hp. Curves; Mill Motors—Committee. 1926—430.
Skip Hoist Drive Efficiency—A. C. Cummins and A. R. Leavitt. 1923—453.
Skip Hoist Diagram—David L. Lindquist. 1918—45.
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Synchronous Speeds—L. M. Smith. 1922—714.
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T

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Turbine Economy Test—Low Pressure—Brent Wiley. 1913—192.
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Turbo-Generators—D.C.—Capacity and Costs at Different Speeds—H. A. Rapelye. 1913—53.
Turbo-Generators—D.C.—Capacity and Steam Consumption at Different Speeds—H. A. Rapelye. 1913—54.
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U

Unaflow Engine and Compound Corliss Engine—Comparison of—Joseph Breslove. 1916—155.

W

Water Rate Curve—Unaflow Engine—W. Trinks. 1916—143.
Water Rate Against Load Curve. Compound Engine—W. Trinks. 1916—143.
Weld Data—O. H. Escholz. 1917—699.
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Electricity's Contribution To The Iron & Steel Industry

Main Roll Drives in the United States and Canada

With this issue of the Iron and Steel Engineer we are again publishing a tabulated list of main roll drives installed in the Iron and Steel Industry as of December 31st, 1926.

In the past this information has been published in cataloged forms by the different manufacturing companies, each catalog including only those installations involving their own equipment. It has always been difficult for the electrical engineer in the steel industry to properly analyze the information included in these various publications because of the wide differences in the method of tabulation used by the various manufacturers.

In this tabulation the Iron and Steel Engineer is presenting the information in a uniform manner showing the Horse Power, R.P.M., Voltage, Cycles, Type and Size of mill, Method of drive, date of purchase, name of plant and location. Also a classified list which gives the types of installations in Blooming Mills, Plate Mills, Rail and Structural Mills, Bar and Billet Mills, Sheet Bar and Skelp Mills, Sheet and Tin Plate Plants, Rod Mills, Piercing Mills, Tube Mills, Strip and Hoop Mills, Merchant Mills, Wire Mills, Wheel Mills, Aluminum Brass, Copper and Non-Ferrous Mills; also the Multi-Speed Drives, A.C. Speed sets, Direct Current Adjustable Speed Drives and Reversing Blooming Mill Drives are tabulated.

This data has been prepared with the view of providing the Executives, and engineers in the Iron and Steel Industry an authority, and a reference manual for their guidance in future installations and extensions.

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	300	175–225	600	d.c.	10″ Merchant Mill	Direct	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
2	300–300	187.5–112.5	2200	25	12″ Merchant Mill	Direct	1914	Bethlehem Steel Co.	Lebanon, Pa.	GE
3	300	225–300	230	d.c.	Merchant (Finishing) Mil	Direct	1916	Pacific Coast Steel Co.	Seattle, Wash.	W
4	300	250	440	25	Sheet Mill	Geared	1910	Simonds Mfg. Co.	Lockport, N. Y.	GE
5	300	250	440	25	Cogging Mill	Geared	1910	Simonds Mfg. Co.	Lockport, N .Y.	GE
6	300	257	2200	60	Roll		1917	Tennessee Coal, Iron & R. R. Co.	Bessemer, Ala.	CW
7	300	267–800	230	d.c.	Hot Merchant Mill	Geared	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
8	300	267–800	230	d.c.	Hot Merchant Mill	Geared	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
9	300	267–800	230	d.c.	Hot Merchant Mill	Geared	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
10	300	290	2200	25	Brass Mill	Geared	1920	American Brass Co.	Buffalo, N. Y.	W
11	300	290	2200	25	Brass Mill	Geared	1920	American Brass Co.	Buffalo, N. Y.	W
12	300	290	2200	25	Brass Mill	Geared	1920	American Brass Co.	Buffalo, N. Y.	W
13	300	290	2200	25	Brass Mill	Geared	1920	American Brass Co.	Buffalo, N. Y.	W
14	300	300	230	d.c.	Cold Rolling Mill	Geared	1914	Trumbull Steel Co.	Warren, Ohio	W
15	300–300	300–180	2200	25	10″ Merchant Mill	Direct	1914	Bethlehem Steel Co.	Lebanon, Pa.	GE
16	300	300	2200	60	Piercing Mill	Coupled	1918	Pittsburgh Steel Products Co.	Allenport, Pa.	CW
17	300	300–600	230	d.c.	20″ x 30″ Brass Mill	Geared	1920	West Virginia Metal Products Co.	Fairmont, W. Va.	W
18	300	300–600	230	d.c.	20″ x 30″ Brass Mill	Geared	1920	West Virginia Metal Products Co.	Fairmont, W. Va.	W
19	300	200–600	230	d.c.	22″ x 36″ Brass Mill	Geared	1920	West Virginia Metal Products Co.	Fairmont, W. Va.	W
20	300	300–600	230	d.c.	22″ x 36″ Brass Mill	Geared	1920	West Virginia Metal Products Co.	Fairmont, W. Va.	W
21	300	300	230	d.c.	Cold Rolling Mill	Geared	1920	Alan Wood Iron & Steel Co.	Conshohocken, Pa.	W
22	300	300	2200	60	26″ Cold Mill	Geared	1921	International Nickel Co.	Huntington, W. Va.	AC
23	300	300	2200	60	Piercing Mill	Coupled	1917	Pittsburgh Steel Products Co.	Monessen, Pa.	CW
24	300	300	2200	60	Roll		1917	Tennessee Coal, Iron & R. R. Co.	Bessemer, Ala.	CW
25	300	300	230	d.c.	Steel Mill	Geared	1925	National Tube Co.	Lorain, Ohio	AC
26	300	300	230	d.c.	Steel Mill	Geared	1925	National Tube Co.	Lorain, Ohio	AC
27	300	300	230	d.c.	Steel Mill	Geared	1925	National Tube Co.	Lorain, Ohio	AC
28	300–300	315–630	230	d.c.	8″ Merchant Mill	Direct	1919	Donner Steel Co.	Buffalo, N. Y.	GE
29	300	325–650	220	d.c.	Sheet Mill		1919	Aluminum Co. of America	New Kensington, Pa.	AC
30	300–225–165	335–225–165	6600	25	12″ Hot Strip Mill	Geared	1920	Illinois Steel Co.	Gary, Ind.	GE
31	300	340	2200	60	Cold Rolling Mill	Geared	1921	Newton Steel Co.	Newton Falls, Ohio	W
32	300	345–500	500	d.c.	Tube Rolling Mill	Geared	1912	Pittsburgh Steel Prod. Co.	Monessen, Pa.	W
33	300	350	2200	60	Seamless Tube Mill	Geared	1915	Timken Roller Bearing Co.	Canton, Ohio	W
34	300	350	2200	60	Cold Rolling Mill	Geared	1915	Mansfield Sheet & Tin Plate Co.	Mansfield, Ohio	W
35	300	350	2200	60	Tube Rolling Mill	Geared	1919	Timken Roller Bearing Co.	Canton, Ohio	W
36	300	350–450	230	d.c.	Lap Welding Mill	Coupled	1923	Gary Tube Co.	Gary, Ind.	AC
37	300	350–500	230	d.c.	Merchant Mill	Coupled	1915	Buffalo Bolt Co.	N. Tonawanda, N. Y.	CW
38	300	352	2200	60	Cold Roll Mill	Direct	1923	Sharon Steel Hoop Co.	Youngstown, Ohio	W
39	300	353	2200	60	Cold Rolls	Geared	1923	Reeves Mfg. Co.	Dover, Ohio	AC
40	300	360	2200	60	Sheet Mill—Cold Rolls	Geared	1922	U. Alloy Steel Corp., Berger Div.	Canton, Ohio	GE
41	300	360	2300	60	Cold Rolls	Geared	1923	Ashtabula Steel Co.	Ashtabula, Ohio	GE
42	300	360	2200	60	10″ Strip Mill	Coupled	1923	Pittsburgh Steel Co	Glassport, Pa.	CW
43	300	363	220	25	Cold Rolling Mill	Geared	1920	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
44	300	365	2200	25	8″ Merchant Mill	Direct	1909	Bethlehem Steel Co.	Johnstown, Pa.	W
45	300	375	2200	25	Wire Mill	Geared	1910	Bethelhem Steel Co.	Johnstown, Pa.	GE
46	300	375	2200	25	Wire Mill	Geared	1910	Bethlehem Steel Co.	Johnstown, Pa.	GE
47	300	375	2200	25	Wire Mill	Geared	1910	Bethlehem Steel Co.	Johnstown, Pa.	GE
48	300	375	2200	25	Wire Mill	Geared	1910	Bethlehem Steel Co.	Johnstown, Pa.	GE
49	300	375	2200	25	Wire Mill	Belt	1915	American Steel & Wire Co.	Cleveland, Ohio	GE
50	300	375	2200	25	Wire Mill	Belt	1915	American Steel & Wire Co.	Cleveland, Ohio	GE
51	300	375	2200	25	Wire Mill	Belt	1915	American Steel & Wire Co.	Cleveland, Ohio	GE
52	300	375	2200	25	Wire Mill	Belt	1915	American Steel & Wire Co.	Cleveland, Ohio	GE
53	300	375	2200	25	Wire Mill	Belt	1915	American Steel & Wire Co.	Cleve and, Ohio	GE
54	300	375	2200	25	10″ Bar Mill	Geared	1919	Hammond Steel Co.	Solvay, N. Y.	GE
55	300	375	2200	25		Rope		Bethlehem Steel Co.	Johnstown, Pa.	AC
56	300	375	2200	25		Rope		Bethlehem Steel Co.	Johnstown, Pa.	AC
57	300	375	2200	25	Bar Mill	Coupled		Bethlehem Steel Co	Johnstown, Pa.	AC
58	300	375	2200	25	10″ Rod Mill	Direct	1926	U. S. Aluminum Co.	Massena, N. Y.	GE
59	300	375	2200	25	10″ Rod Mill	Direct	1926	U. S. Aluminum Co.	Massena, N. Y.	GE
60	300	400	550	60	14″ Bar Mill	Geared	1926	Ludlum Steel Co.	Watervliet, N. Y.	GE
61	300–300	400–800	230	d.c.	Cold Strip Mill	Geared	1913	Weirton Steel Co.	Weirton, W. Va.	GE
62	300–300	400–800	230	d.c.	Cold Strip Mill	Geared	1913	Weirton Steel Co.	Weirton, W. Va.	GE
63	300–300	400–800	230	d.c.	Cold Strip Mill	Geared	1913	Weirton Steel Co.	Weirton, W. Va.	GE

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
64	300-300	400-800	230	d.c.	Cold Strip Mill	Geared	1913	Weirton Steel Co.	Weirton, W. Va.	GE
65	300-300	400-800	230	d.c.	20" x 24" Cold Strip Mill	Geared	1919	Trumbull Steel Co.	Warren, Ohio	GE
66	300-300	400-800	230	d.c.	20" x 24" Cold Strip Mill	Geared	1919	Trumbull Steel Co.	Warren, Ohio	GE
67	300-300	400-800	230	d.c.	20" x 24" Cold Strip Mill	Geared	1919	Trumbull Steel Co.	Warren, Ohio	GE
68	300-300	400-800	230	d.c.	20" x 24" Cold Strip Mill	Geared	1919	Trumbull Steel Co.	Warren, Ohio	GE
69	300	400-800	230	d.c.	Edging Rolls	Geared	1926	Trumbull Steel Co.	Warren, Ohio	GE
70	300	435	2200	60	18" Copper Mill	Geared	1920	West Virginia Metal Products Co.	Fairmont, W. Va.	W
71	300	435	2200	60	24" x 48" Copper Mill	Geared	1920	West Virginia Metal Products Co.	Fairmont, W. Va.	W
72	300	435	230	d.c.	12" Pipe Mill	Coupled	1910	A. M. Byers Co.	Pittsburgh, Pa.	CW
73	300	435	230	d.c.	12" Pipe Mill	Coupled	1910	A. M. Byers Co.	Pittsburgh, Pa.	CW
74	300	440	2200	60	Roughing Mill	Coupled	1919	Ft. Wayne Rolling Mill Co.	Ft. Wayne, Ind.	AC
75	300	440	2200	60	Cold Roll Mill	Geared	1924	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
76	300	440	2200	60	Cold Roll Mill	Geared	1924	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
77	300	450	440	60	Wire Mill	Geared	1914	American Steel & Wire Co.	Joliet, Ill.	AC
78	300	450	440	60	Wire Mill		1914	American Steel & Wire Co.	Joliet, Ill.	AC
79	300	450-750	230	d.c.	Wheel Mill	Geared	1913	Bethlehem Steel Co.	Johnstown, Pa.	AC
80	300	450-750	230	d.c.	Wheel Mill	Geared	1913	Bethlehem Steel Co.	Johnstown, Pa.	AC
81	300	450	230	d.c.	Merchant Bar Mill	Geared	1916	Carbon Steel Co.	Pittsburgh, Pa.	W
82	300	450	2200	60	8" Merchant Mill		1917	Columbia Steel Corp.	Los Angeles, Cal.	GE
83	300	450	550	60	Bar Mill	Coupled	1921	National Conduit & Cable Co.	Hast. on Hudson,N.Y	AC
84	300	450	220	30	Lap Welding Rolls	Geared	1923	Spang Chalfant Co.	Etna, Pa.	GE
85	300	450	2200	60	Cross Rolls in Tube Mill	Geared	1924	Standard Seamless Tube Co.	Economy, Pa.	GE
86	300	450	2200	60	Cross Rolls in Tube Mill	Geared	1924	Standard Seamless Tube Co.	Economy, Pa.	GE
87	300	485	2200	25	Cold Rolling Mill	Direct	1916	Halcomb Steel Co.	Syracuse, N. Y.	W
88	300-300	500-300	2200	25	9" Merchant Mill	Direct	1914	Bethlehem Steel Co.	Lebanon, Pa.	GE
89	300-300	500-300	2200	25	8" Merchant Mill	Direct	1914	Bethlehem Steel Co.	Lebanon, Pa.	GE
90	300	500	220	25	Tube Mill	Geared	1915	Republic Iron & Steel Co.	Youngstown, Ohio	GE
91	300	500	2080	25	9" Merchant Mill	Geared	1916	Halcomb Steel Co.	Syracuse, N. Y.	GE
92	300	500	550	25	Tube Mill	Geared	1917	Baltimore Tube Co.	Baltimore, Md.	W
93	300	500	230	d.c.	Welding Rolls, pipe mill	Geared	1925	Central Tube Co.	Economy, Pa.	GE
94	300	500	550	25	Tube Mill	Geared	191	Baltimore Tube Co.	Baltimore, Md.	W
95	300	500	220	25		Geared	1917	Republic Iron & Steel Co.	Youngstown, Ohio	GE
96	300	500		60	Brass Mill	Coupled	1917	British American Metals Co.	Plainfield, N. J.	CW
97	300	505	2200	60	20" Sheet Strip Jobbing Mill	Geared	1926	Indiana Rolling Mill Co.	New Castle, Ind.	W
98	300	505	2200	60	20" Sheet Strip Jobbing Mill	Geared	1926	Indiana Rolling Mill Co.	New Castle, Ind.	W
99	300	514	440	60	Tube Mill	Geared	1914	Detroit Seamless Tube Co.	Detroit, Mich.	GE
100	300	514	220	60	Tube Mill	Geared	1914	Detroit Seamless Tube Co.	Detroit, Mich.	GE
101	300	514	440	60	Brass Mill	Geared	1915	Chase Metal Works	Waterbury, Conn.	GE
102	300	514	2200	60	Bar Mill	Geared	1915	C. G. Hussey	Pittsburgh, Pa.	AC
103	300	514	220	60	Tube Mill	Geared	1918	Detroit Seamless Tube Co.	Detroit, Mich.	AC
104	300	514	550	60	Brass Sheet Mill	Geared	1919	American Brass Co.	Hastings, N. Y.	GE
105	300	514	550	60	14" Cold Strip Mill	Geared	1922	Wallingford Steel Co.	Wallingford, Conn.	GE
106	300	575	2200	60	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
107	300	575	2200	60	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
108	300	575	2200	60	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
109	300	575	2200	60	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
110	300	575	2200	60	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
111	300	575	2200	60	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
112	300	575	2200	60	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
113	300	575	2200	60	Cold Rolling Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
114	300	575	2200	60	Cold Rolling Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
115	300	575	2200	60	Cold Rolling Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
116	300	575	2200	60	Cold Rolling Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
117	300	575	2200	60	Rod Mill	Geared	1922	Standard Underground Cable Co.	Perth Amboy, N. J.	W
118	300	585	440	60	18" Copper Mill	Chain	1916	Standard Underground Cable Co.	Perth Amboy, N. J.	W
119	300-150	590-292	2200	60	9" Merchant (Fin.) Mill	Geared	1920	Cleveland Hardware Co.	Cleveland, Ohio	W
120	300	600	2200	60	Brass Mill	Geared	1915	Chase Metal Works	Waterbury, Conn.	GE
121	300	600	2200	60	14" Mill		1915	Cleveland Brass & Copper Co.	Cleveland, Ohio	AC
122	300	600	2200	60	18" Mill		1915	Cleveland Brass & Copper Co.	Cleveland, Ohio	AC
123	300-300-150	600-400-300	440	60	Bar Mill	Chain	1916	Vulcan Crucible Steel Co.	Aliquippa, Pa.	GE
124	300	600	2300	60	12" Billet Mill	Geared	1916	Tennessee Coal, Iron & R. R. Co.	Bessemer, Ala.	GE
125	300	600	2200	60	Merchant Mill	Geared	1916	Tennessee Coal, Iron & R. R. Co.	Bessemer, Ala.	GE
126	300	600	2300	60	Wire Mill	Geared	1917	American Steel & Wire Co.	Waukegan, Ill.	GE
127	300	600	440	60	Brass Mill	Geared	1919	Bristol Brass Co.	Bristol, Conn.	GE
128	300	600	2200	60	10" Hot Strip Mill	Direct	1919	Superior Steel Co.	Carnegie, Pa.	GE
129	300	600	440	60	Brass Mill		1920	Detroit Copper & Brass Co.	Detroit, Mich.	AC
130	300	600	440	60			1920	Detroit Copper & Brass Co.	Detroit, Mich.	AC
131	300	600	440	60			1920	Detroit Copper & Brass Co.	Detroit, Mich.	AC
132	300	600	2200	60	Tube Mill	Geared	1922	Weldless Tube Co.	Wooster, Ohio	GE
133	300	600	2200	60	Tube Mill	Geared	1922	Weldless Tube Co.	Wooster, Ohio	GE
134	300	600	2200	60	Cold Sheet Mill Rolls	Geared	1923	Falcon Steel Co.	Niles, Ohio	GE
135	300	600	550	60		Geared		National Conduit & Cable Co.	Hast. on Hudson,N.Y	AC
135	300	600	550	60		Geared		National Conduit & Cable Co.	Hast. on Hudson,N.Y	AC
137	300	600	440	60	Copper Strip Mill	Geared	1925	Detroit Copper & Brass Co.	Detroit, Mich.	CW
138	300	720	440	60	14" Merchant Mill	Geared	1913	Union Rolling Mills Co.	Cleveland, Ohio	GE
139	300	720	2200	60	Wire Rod Mill	Geared	1917	Rome Wire Co.	Rome, N. Y.	AC
140	300	720	440	60	12" Merchant Mill	Geared	1919	The Stanley Works	New Britain, Conn.	GE
141	300	720	440	60	Bar Mill	Geared	1920	Hoskins Mfg. Co.	Detroit, Mich.	AC
142	300	750	3000	50	Merchant Mill	Geared	1923	Cons. Rolling Mills Co.	Mexico City, Mex.	GE
143	300	750	2200	25	10" Bar Mill	Geared	1923	Bethlehem Steel Co.	Lebanon, Pa.	GE
144	300-200	920-360	220	d.c.	Merchant Mill	Direct	1919	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
145	320	400-800	230	d.c.	Cold Strip Drive	Geared	1926	International Nickle Co.	Huntington, W. Va.	AC
146	325	360	2200	60	Bar Mill	Geared	1915	Heppenstall Forge & Knife Co.	Pittsburgh, Pa.	GE
147	325	600	2300	60	Wire Mill	Geared	1917	American Steel & Wire Co.	Waukegan, Ill.	GE
148	340	85	230	d.c.	Welding Rolls	Coupled	1906	National Tube Co.	McKeesport, Pa.	CW
149	350	125	6600	25	12" Bar Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
150	350	145	2200	60	Cold Rolling Mill	Rope	1912	Central Steel Co.	Massillon, Ohio	W
151	350-350	150-100	6600	25	12" Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
152	350	200-300	250	d.c.	9" Merchant Mill	Direct	1919	National Farming Mach. Co., Ltd.	Montmagny, P. Q.	W
153	350-350	240-480	240	d.c.	10" Merchant Mill	Direct	1923	LaClede Steel Co.	St. Louis, Mo.	GE
154	350	242	2200	25	Cold Strip Mill	Geared	1922	Otis Steel Co.	Cleveland, Ohio	W
155	350	250	2200	25	10" Rod Mill	Direct	1911	Dillworth Porter Co.	Pittsburgh, Pa.	GE
156	350	250	440	25	Brass Mill	Geared	1921	Harrison Radiator Corp.	Lockport, N. Y.	GE
157	350	250-325	230	d.c.	9" Merchant Mill	Direct	1921	Wayne Steel Co.	Erie, Pa.	W
158	350-350	275-470	375	d.c.	Reversing Copper Mill	Geared	1920	American Brass Co.	Buffalo, N. Y.	GE
159	350-350	275-470	375	d.c.	Reversing Copper Mill	Geared	1920	American Brass Co.	Buffalo, N. Y.	GE
160	350-350	275-470	375	d.c.	Reversing Copper Mill	Geared	1920	American Brass Co.	Kenosha, Wis.	GE
161	350-350	275-470	375	d.c.	Reversing Copper Mill	Geared	1922	Taunton-New Bedford Copper Co.	Taunton, Mass.	GE
162	350-235	300-200	6600	25	Merchant Mill	Geared	1920	Illinois Steel Co.	Gary, Ind.	GE
163	350	300	230	d.c.	Wire Draw Bench	Coupled	1908	Pittsburgh Steel Co.	Monessen, Pa.	CW
164	350	300	230	d.c.	Wire Draw Bench	Coupled	1908	Pittsburgh Steel Co.	Monessen, Pa.	CW
165	350	300	230	d.c.	Wire Draw Bench	Coupled	1908	Pittsburgh Steel Co.	Monessen, Pa.	CW
166	350	300	230	d.c.	Wire Draw Bench	Coupled	1911	Pittsburgh Steel Co.	Monessen, Pa.	CW
167	350	345	440	60	Sheet Mill	Geared	1917	Universal Steel Co.	Bridgeville, Pa.	W
168	350	320	2200	60	21" Plate (Cold Roll.) Mill	Geared	1910	Oliver Iron & Steel Co.	Wilson Station, Pa.	W
169	350-350	360-240	240	d.c.	10" Merchant Mill	Direct	1911	LaClede Steel Co.	St. Louis, Mo.	GE
170	350	360	2200	60	Sheet Mill—Cold Rolls	Geared	1919	Falcon Steel Co.	Niles, Ohio	GE
171	350-350	360-450	230	d.c.	Welding Rolls	Direct	1920	National Tube Co.	Lorain, Ohio	GE
172	350-350	360-450	230	d.c.	Welding Rolls	Direct	1920	National Tube Co.	Lorain, Ohio	GE

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd By
173	350-350	360-240	440	60	Bar Mill	Coupled	1921	Simmons Mfg. Co.	Kenosha, Wis.	AC
174	350-350	375-214	6600	25	9" Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
175	350	400	2200	60	Wire Rod Mill	Geared	1918	Taunton-New Bedford Copper Co.	New Bedford, Mass.	AC
176	350	400	2200	60	Wire Rod Mill	Coupled	1918	Taunton-New Bedford Copper Co.	New Bedford, Mass.	AC
177	350	400	2200	60	Wire Rod Mill	Coupled	1918	Taunton-New Bedford Copper Co.	New Bedford, Mass.	AC
178	350	400-600	230	d.c.	Hot Mill	Geared	1913	Bethlehem Steel Co.	Lackawanna, N. Y.	CW
179	350	420	2200	50	Merchant Mill	Geared	1919	Southern California Iron & Steel Co.	Los Angeles, Cal.	W
180	350	435	2200	60	Pipe Welding Rolls	Geared	1919	Wheeling Steel Corporation	Steubenville, Oh o	W
181	350	450-600	230	d.c.	Band Mill	Direct	1926	Sharon Steel Hoop Co.	Sharon, Pa.	CW
182	350	480	2200	25	12" Roughing Mill	Geared	1923	Halcomb Steel Co.	Syracuse, N. Y.	W
183	350	490	6400	25	24" Flat Edging Mill	Geared	1916	American Steel & Wire Co.	Cleveland, Ohio	W
184	350	490	2200	25	Brass Mill	Geared	1920	American Brass Co.	Buffalo, N. Y.	W
185	350	490	2200	25	Brass Mill	Geared	1920	American Brass Co.	Buffalo, N. Y.	W
186	350	500	230	d.c.	16" Cont. Skelp Mill	Geared	1924	Gary Tube Co.	Gary, Ind.	AC
187	350	524-850	230	d.c.	18" Blading Mill	Geared	1924	W. E. & M. Co.	South Phila. Works	W
188	350	580	2200	60	Merchant Mill	Geared	1916	Copper Clad Steel Co.	Pittsburgh, Pa.	W
189	350	590	2200	60	12" Merchant Mill	Geared	1918	Indianapolis & Eastern TractionCo.	Indianapolis, Ind.	W
190	350	600	2200	60	Bar Mill	Belted	1920	Joslyn Mfg. Co.	Chicago, Ill.	AC
191	350	700	2200	60	Merchant Mill	Geared	1918	Kilby Car & Foundry Co.	Anniston, Ala.	W
192	360	300-425	230	d.c.	8" Rod Mill	Direct	1915	United Alloy Steel Corporation	Canton, Ohio	W
193	360	300-600	230	d.c.	Rod Mill	Direct	1922	United Alloy Steel Corporation	Canton, Ohio	W
194	360	350-500	230	d.c.	7" Rod Mill	Direct	1915	United Alloy Steel Corporation	Canton, Ohio	W
195	375	430-860	230	d.c.	20" Cold Rolling Mill	Geared	1922	Otis Steel Company	Cleveland, Ohio	W
196	375	430-860	230	d.c.	20" Cold Rolling Mill	Geared	1922	Otis Steel Company	Cleveland, Ohio	W
197	375	430-860	230	d.c.	20" Cold Rolling Mill	Geared	1922	Otis Steel Company	Cleveland, Ohio	W
198	375	430-860	230	d.c.	20" Cold Rolling Mill	Geared	1922	Otis Steel Company	Cleveland, Ohio	W
199	375	430-860	230	d.c.	20" Cold Rolling Mill	Geared	1922	Otis Steel Company	Cleveland, Ohio	W
200	375	430-860	230	d.c.	Cold Roll Mill	Geared	1925	Otis Steel Co.	Cleveland, Ohio	GE
201	375	430-860	230	d.c.	Cold Roll Mill	Geared	1925	Otis Steel Co.	Cleveland, Ohio	GE
202	400	20		d.c.	32" x 48" Plate Mill	Coupled	1910	American Sheet & Tin Plate Co.	Gary, Indiana	CW
203	400	20		d.c.	32" x 48" Plate Mill	Coupled	1910	American Sheet & Tin Plate Co.	Gary, Indiana	CW
204	400	20		d.c.	32" x 48" Plate Mill	Coupled	1910	American Sheet & Tin Plate Co.	Gary, Indiana	CW
205	400	20		d.c.	32" x 48" Plate Mill	Coupled	1910	American Sheet & Tin Plate Co.	Gary, Indiana	CW
206	400	75		d.c.	Welding Rolls	Coupled	1906	National Tube Co.	McKeesport, Pa.	CW
207	400-400	107- 64	2200	25	16" Bar Mill	Direct	1914	Bethlehem Steel Co.	Lebanon, Pa.	GE
208	400	125	230	d.c.	12" Structural Mill	Direct	1919	Eastern Steel Co.	Pottsville, Pa.	W
209	400	200-300	230	d.c.	9" Merchant Mill	Direct	1914	United Alloy Steel Corporation	Canton, Ohio	W
210	400	210-350		d.c.	Merchant Mill		1915	Buffalo Bolt Co.	No. Tonawanda, N. Y	CW
211	400	240-721	600	d.c.	9" Merchant Mill	Geared	1926	Illinois Steel Co.	Gary, Ind.	GE
212	400	240-721	600	d.c.	9" Merchant Mill	Geared	1926	Illinois Steel Co.	Gary, Ind.	GE
213	400	240-721	600	d.c.	9" Merchant Mill	Geared	1926	Illinois Steel Co.	Gary, Ind.	GE
214	400	240-721	600	d.c.	9" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
215	400-400	250-500	230	d.c.	10" Merchant Mill	Direct	1920	Timken Roller Bearing Co.	Canton, Ohio	GE
216	400-400	275-500	550	d.c.	12" Hot Strip Mill	Direct	1916	American Steel & Wire Co.	Cleveland, Ohio	GE
217	400	290	2200	60	Cold Rolling Mill	Geared	1916	Youngstown Sheet & Tube Co.	Warren, Ohio	W
218	400	290	2200	60	Cold Rolling Mill	Geared	1917	Liberty Steel Co.	Warren, Ohio	W
219	400	300	2200	25	Merchant Mill	Rope	1909	American Steel & Wire Co.	Cleveland, Ohio	GE
220	400	300	2200	25	Merchant Mill	Rope	1909	American Steel & Wire Co.	Cleveland, Ohio	GE
221	400	300	2200	25	Merchant Mill	Rope	1909	American Steel & Wire Co.	Cleveland, Ohio	GE
222	400	300	2200	25	Merchant Mill	Rope	1909	American Steel & Wire Co.	Cleveland, Ohio	GE
223	400	300	2200	25		Geared	1918	Pittsburgh Steel Co.	Monessen, Pa.	AC
224	400	300	440	60			1918	Withrow Steel Co.	Neville Island, Pa.	AC
225	400	350	440	60	9" Copper Finishing Mill	Direct	1916	Standard Underground Cable Co.	Perth Amboy, N. J.	W
226	400	352	2200	60	Copper Rod Mill	Geared	1923	American Brass Company	Kenosha, Wis.	W
227	400	360	2200	60	Sheet Mill, Cold Rolls	Geared	1916	Mahoning Valley Steel Co.	Niles, Ohio	GE
228	400	360	2200	60	Sheet Mill, Cold Rolls	Geared	1916	Mahoning Valley Steel Co.	Niles, Ohio	GE
229	400	360	2200	60	Brass Mill	Geared	1917	American Brass Co.	Waterbury, Conn.	GE
230	400	360	2200	60	Brass Mill	Geared	1917	American Brass Co.	Waterbury, Conn.	GE
231	400	360	2200	60	Cold Roll Sheet Mill	Geared	1918	Reeves Mfg. Co.	Canal Dover, Ohio	GE
232	400	360	2200	60	Brass Mill	Geared	1921	American Brass Co.	Torrington, Conn.	GE
233	400	360	2200	60	Brass Mill	Geared	1921	American Brass Co.	Torrington, Conn.	GE
234	400	360	440	60	Cold Strip Mill	Geared	1921	American Tube and Stamping Co.	Bridgeport, Conn.	GE
235	400	360	440	60			1921	Detroit Copper & Brass Co.	Detroit, Mich.	AC
236	400	360	2200	60	8" Strip Mill	Coupled	1923	Pittsburgh Steel Co.	Glassport, Pa.	CW
237	400	360	2300	60	Sheet Mill, Cold Rolls	Geared	1925	Thomas Sheet Steel Co.	Niles, Ohio	GE
238	400	375	220	25	20" Tube Mill, Wld. Rolls	Geared	1909	Youngstown Sheet & Tube Co.	Youngstown, Ohio	GE
239	400	375	220	25	Tube Mill, Chill Rolls	Geared	1909	Youngstown Sheet & Tube Co.	Youngstown, Ohio	GE
240	400	375	2200	25	Wire Drawing Bench	Rope	1915	American Steel & Wire Co.	Cleveland, Ohio	GE
241	400	375	2200	25	Wire Drawing Bench	Rope	1915	American Steel & Wire Co.	Cleveland, Ohio	GE
242	400	375	220	25	Tube Mill, Wld. Rolls	Geared	1917	Youngstown Sheet & Tube Co.	Youngstown, Ohio	GE
243	400	375	220	25	Tube Mill, Wld. Rolls	Geared	1912	Youngstown Sheet & Tube Co.	Youngstown, Ohio	GE
244	400	375	220	25	Tube Mill, Wld. Rolls	Geared	1922	Youngstown Sheet & Tube Co.	Youngstown, Ohio	GE
245	400	385	550	40	22" Puddle Mill	Geared	1917	Cohoes Rolling Mill Co.	Cohoes, N. Y.	W
246	400	400-450	220	d.c.	8" Merchant Mill	Direct	1911	Illinois Steel Co.	Milwaukee, Wis.	W
247	400	400	400	60	Bar Mill	Chain	1918	Latrobe Steel Co.	Latrobe, Pa.	AC
248	400	400	440	60	Lap Welding Rolls	Geared	1923	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE
249	400	400	440	60	Lap Welding Rolls	Geared	1923	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE
250	400	400-800	230	d.c.	Cold Strip Mill	Geared	1926	Trumbull Steel Co.	Warren, Ohio	GE
251	400	435	2200	60	Aluminum Mill	Geared	1918	U. S. Aluminum Co.	New Kensington, Pa	W
252	400	435	2200	60	Aluminum Mill	Geared	1918	U. S. Aluminum Co.	New Kensington, Pa.	W
253	400	435	440	60	Pipe Mill	Geared	1918	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
254	400	435	2200	60	Aluminum Mill	Geared	1919	U. S. Aluminum Co.	Edgewater, N. J.	W
255	400	440	2200	50	Copper Rod Mill	Geared	1922	American Brass Company	Kenosha, Wis	W
256	400	440	4000	60	Billet Mill	Coupled	1923	Bryden Neverslip Co.	Catasauqua, Pa.	AC
257	400	450	2200	50	Brass Mill	Geared	1917	American Brass Co.	Waterbury, Conn.	GE
258	400	450	2200	50	Bar Mill	Geared	1917	Standard Seamless Tube Co.	Economy, Pa.	AC
259	400	450	550	60		Geared	1918	Pressed Steel Car Co.	McKees Rocks, Pa.	AC
260	400	450	2200	60	Wire Drawing Bench	Geared	1919	Gulf States Steel Co.	Birmingham, Ala.	GE
261	400	450	2200	60	Wire Drawing Bench	Geared	1919	Gulf States Steel Co.	Birmingham, Ala.	GE
262	400	450	440	60	Brass Sheet Mill	Geared	1920	Detroit Copper & Brass Co.	Detroit, Mich.	GE
263	400	450	440	60			1921	Detroit Copper & Brass Co.	Detroit, Mich.	AC
264	400	450	440	50	Sheet Mill	Geared	1924	New Jersey Zinc Co.	Palmerton, Pa.	GE
265	400	450	440	60	Sheet Mill	Geared	1924	New Jersey Zinc Co.	Palmerton, Pa.	GE
266	400	450	2200	50	9" Bar Mill	Geared	1924	Atchison, Topeka & S. F. Ry. Co	Chicago, Ill.	AC
267	400	450	2200	60	12" Bar Mill	Geared	1924	Atchison, Topeka & S. F. Ry. Co	Chicago, Ill.	AC
268	400	485	440	25	9" Merchant Mill	Geared	1916	Hess Steel Corporation	Baltimore, Md.	W
269	400	500-1000	600	d.c.	Strip Mill	Geared	1926	Forged Steel Wheel Co.	Butler, Pa.	AC
270	400	500-1000	600	d.c.	Strip Mill	Geared	1926	Forged Steel Wheel Co.	Butler, Pa.	AC
271	400	500-1000	600	d.c.	Strip Mill	Geared	1926	Forged Steel Wheel Co.	Butler, Pa.	AC
272	400	500-1000	600	d.c.	Strip Mill	Geared	1926	Forged Steel Wheel Co.	Butler, Pa.	AC
273	400	514	2200	60			1918	Cleveland Brass & Copper Co.	Cleveland, Ohio	AC
274	400	514	2200	60	Brass Tubes	Geared	1915	American Brass Company	Waterbury, Conn.	GE
275	400	514	2200	60	Brass Tubes	Geared	1915	American Brass Company	Waterbury, Conn.	GE
276	400	514	2200	60	24" Roughing Mill	Geared	1915	American Brass Company	Kenosha, Wis.	AC
277	400	514	2200	60	20" Flat Mill	Geared	1915	American Brass Company	Kenosha, Wis.	AC
278	400	514	2200	60	18" Bar Mill	Geared	1915	American Brass Company	Kenosha, Wis.	AC
279	400	514	440	60	16" Copper Bar Mill	Geared	1916	Waclark Wire Co.	Elizabeth, N. J.	GE
280	400	514	2200	60	Bar Mill	Geared	1919	Judson Mfg. Co.	Oakland, Calif.	AC
281	400	514	2200	60	Brass Mill	Geared	1922	Western Cartridge Co.	East Alton, Ill.	GE
282	400	514	6600	60			1924	Weirton Steel Co.	Weirton, W. Va.	AC
283	400	514	6600	60			1924	Weirton Steel Co.	Weirton, W. Va.	AC

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
284	400	514	4000	60	Rail Splitter	Direct	1926	Inland Steel Co.	Indiana Harbor, Ind.	GE
285	400	575	2200	60	Cold Rolling Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
286	400	575	2200	60	Cold Rolling Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
287	400	575	2200	60	Cold Rolling Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
288	400	575	2200	60	Cold Rolling Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
289	400	575	440	60	Sheet Cop. Rolling Mill	Geared	1923	American Metal Products Co.	Milwaukee, Wis.	W
290	400	585	4000	60	14″ Merchant Mill	Geared	1922	Calumet Steel Co.	Chicago, Ill.	W
291	400–225	600–300	550	40	Bar Mill	Geared	1909	Ludlum Steel Co.	Watervliet, N. Y.	GE
292	400	600	440	60	Piercing Mill	Geared	1915	Chase Metal Works	Waterbury, Conn.	GE
293	400	600	440	60	Billet Piercing Machine	Geared	1915	Chase Metal Works	Waterbury, Conn.	GE
294	400	600	440	60	Brass Mill	Geared	1917	Rome Brass & Copper Co.	Rome, N. Y.	GE
295	400	600	2200	60	Wire Rod Mill	Geared	1917	Rome Wire Co.	Rome, N. Y.	AC
296	400	600	440	60	Wire Mill	Coupled	1917	Rome Wire Co.	Rome, N. Y.	AC
297	400	600	440	60	12″ Merchant Mill	Geared	1919	The Stanley Works	New Britain, Conn.	GE
298	400	600	440	60	Tube Mill	Geared	1920	Globe Seamless Tube Co.	Milwaukee, Wis.	AC
299	400	600	2200	60	Brass Mill	Geared	1921	American Brass Company	Torrington, Conn.	GE
300	400	600	550	60		Geared	1912	National Conduit & Cable Co.	Hast.on Hudson,N.Y	AC
301	400	600	2200	60	Zinc Mill	Geared	1922	Ball Brothers Glass Co.	Muncie, Ind.	GE
302	400	600	220	60		Coupled	1918	Consumers Steel Co.	Chicago, Ill.	AC
303	400	600	2200	60	2-Roughing Stands—Brass Rolling Mills	Geared	1925	American Brass Co.	Torrington, Conn.	GE
304	400	705	2200	60	16″ Cogging Mill	Geared	1923	Crucible Steel Co. of America Park Works	Pittsburgh, Pa.	W
305	400	720–450	2200	60	Bar Mill	Geared	1917	Cyclops Steel Co.	Titusville, Pa.	AC
306	400	720	2200	60	Copper Mill	Geared	1920	Rome Wire Co.	Rome, N. Y.	GE
307	400	720	550	60	Copper Mill	Geared	1920	Phillips Wire Co.	Pawtucket, R. I.	GE
308	400	750	4400	25	Rail Splitter	Geared	1925	Buffalo Steel Co.	Tonawanda, N. Y.	GE
309	400–200	800–400	230	d.c.	Copper Sheet Mill	Geared	1925	Rome Brass & Copper Co.	Rome, N. Y.	GE
310	400–265	875–585	2200	60	Bar Mill	Geared	1913	Old Dominion Iron & Nail Co.	Richmond, Va.	W
311	400	900	550	60	Brass Mill	Geared	1920	American Brass Company	Ansonia, Conn.	GE
312	400	900	550	60	Brass Mill	Geared	1920	American Brass Company	Ansonia, Conn.	GE
313	400	900	550	60	Brass Mill	Geared	1920	American Brass Company	Ansonia, Conn.	GE
314	400	900	550	60	Brass Mill	Geared	1920	American Brass Company	Ansonia, Conn.	GE
315	400	900	2200	60	Bar and Billet Mill	Geared	1925	Crucible Steel Co.	Pittsburgh, Pa.	W
316	400	900	550	60	Brass Mill	Geared	1921	American Brass Company	Ansonia, Conn.	GE
317	450	125	6600	25	12″ Bar Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
318	450	200–400	230	d.c.	Zinc Sheet Mill, 26″ x 72″	Geared	1924	Illinois Zinc Co.	Peru, Illinois	W
319	450	211–422	600	d.c.	9″ Merchant Mill	Geared	1926	Illinois Steel Co.	Gary, Ind.	GE
320	450	211–422	600	d.c.	9″ Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
321	450	300	2200	60			1920	Pittsburgh Steel Prod. Co.	Allenport. Pa.	AC
322	450	300	2200	60			1920	Pittsburgh Steel Prod. Co.	Allenport, Pa.	AC
323	450	300	230	d.c.	10″ Tube Mill	Coupled	1911	Pittsburgh Seamless Tube Co.	Beaver Falls, Pa.	CW
324	450	354–230	2200	60	8″ Merchant Mill	Direct	1919	Bourne-Fuller Co.	Cleveland, Ohio	W
325	450	375	440	25	Cold Roll	Geared	1925	Seneca Iron & Steel Co.	Blasdell, N. Y.	CW
326	450	400–650	230	d.c.	Rod (1 Stand) No. 2 Mill	Direct	1913	lAmerican Stee & Wire Co.	Worcester, Mass.	W
327	450	440	2200	60	Merchant Mill	Geared	1920	Kansas City Bolt & Nut Co.	Kansas City, Mo.	W
328	450	440–350	2220	60	Cont. Hoop (Finishing)	Direct	1920	Conners Steel Co.	Birmingham, Ala.	W
329	450	450–600	230	d.c.	12″ Cold Strip Mill	Geared	1915	Superior Steel Co.	Carnegie, Pa.	W
330	450	450–600	230	d.c.	12″ Cold Strip Mill	Geared	1915	Superior Steel Co.	Carnegie, Pa.	W
331	450	450	2080	60	18″ Merchant Mill	Geared	1919	Columbia Steel Co.	Pittsburgh, Cal.	GE
332	450	450	2080	60	12″ Merchant Mill	Geared	1919	Columbia Steel Co.	Pittsburgh, Cal.	GE
333	450	560	440	60	Brass Rolling Mill	Geared	1918	Michigan Copper & Brass Co.	Detroit, Mich.	W
334	450	514	550	60	14″ Cold Strip Mill	Geared	1922	Wallingford Steel Co.	Wallingford, Conn.	GE
335	450	550–750	230	d.c.	Zinc Rolls	Coupled	1924	Mattheisen & Hegeler Zinc Co.	LaSalle, Ill.	CW
336	450	550–750	230	d.c.	Zinc Strip Mills	Geared	1925	Mattheisen & Hegeler Zinc Co.	LaSalle, Ill.	CW
337	450	585	2200	60	14″ Merchant Mill	Geared	1918	Columbia Steel Co.	Los Angeles, Cal.	W
338	450	600	550	60	Copper Rod Mill	Geared	1920	Phillips Wire Co.	Pawtucket, R. I.	GE
339	450	700–595	2200	60	Cont. Hoop (Finishing)	Direct	1921	Conners Steel Co.	Birmingham, Ala.	W
340	450	720	2200	60	Piercing Mill	Geared	1924	Standard Seamless Tube Co.	Economy, Pa.	GE
341	450	730–490	4000	25	10″ Merchant Mill	Geared	1917	Atlas Steel Corporation	Dunkirk, N. Y.	W
342	450	730	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
343	450	730	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
344	450	870	440	60	Copper Clad Mill	Geared	1915	Duplex Metal Co.	Philadelphia, Pa.	W
345	450–360	870–695	2200	60	10″ Merchant Mill	Geared	1914	Cleveland Hardware Co.	Cleveland, Ohio	W
346	450–360	875–700	2200	60	9″ Merchant Mill	Geared	1915	National Lock Washer Co.	Riverside, N. J.	W
347	475–350	240–181	440	25	10″ Merchant Mill	Direct	1914	Kansas City Bolt & Nut Co.	Kansas City, Mo.	W
348	485–360	870–695	2200	60	10″ Merchant Mill	Geared	1915	Old Dominion Iron & Nail Co.	Richmond, Va.	W
349	500	0–200	500	d.c.	78″ Reversing Brass Plate	Geared	1920	West Virginia Metal Products Co.	Fairmont, W. Va.	W
350	500	88	6600	25	16″ Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
351	500–385–250	130–100–65	440	25	14″ Merchant Mill	Direct	1923	Halcomb Steel Co.	Syracuse, N. Y.	GE
352	500	130–310	600	d.c.	10″ Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
353	500	150–225	250	d.c.	12″ Merchant Mill	Direct	1919	National Farming Mach. Co., Ltd.	Montmagny, P. Q.	W
354	500	150–550	600	d.c.	10″ Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
355	500	155–500	250	d.c.	Tyre Mill	Direct	1923	McConway Torley Co.	Pittsburgh, Pa.	W
356	500	175–350	250	d.c.	12″ Merchant Mill	Direct	1926	Pittsburgh Crucible Steel Co.	Midland, Pa.	GE
357	500	175–350	600	d.c.	12″ Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
358	500	175–350	600	d.c.	12″ Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
359	500	175–350	600	d.c.	12″ Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
360	500	180–360	600	d.c.	14″-12″ Skelp Mill	Geared	1926	Wheeling Steel Corp.	Benwood, W. Va.	GE
361	500	184	2200	25	12″ Merchant Mill	Rope	1905	Ontario Iron & Steel Co.	Welland, Ont.	W
362	500	184	2200	25	16″ Merchant Mill	Direct	1908	Bethlehem Steel Co.	Johnstown, Pa.	W
363	500	190	230	d.c.	18″ Tandem Rough. Mill	Rope	1910	Sharon Steel Hoop Co.	Sharon, Pa.	GE
364	500	190	230	d.c.	24″ Blooming Mill	Geared	1910	Sharon Steel Hoop Co.	Sharon, Pa.	GE
365	500	200–400	250	d.c.	10″ Cont. Mill	Coupled	1925	Republic Iron & Steel Co.	Youngstown, Ohio	AC
366	500	214	6600	25	Axle Mill	Geared	1909	Illinois Steel Co.	Gary, Ind.	GE
367	500	220–400	550	d.c.	Brass Mill	Geared	1913	Scoville Manufacturing Co.	Waterbury, Conn.	W
368	500	220–400	550	d.c.	Brass Mill	Geared	1913	Scoville Manufacturing Co.	Waterbury, Conn.	W
369	500	220–400	550	d.c.	Brass Mill	Geared	1913	Scoville Manufacturing Co.	Waterbury, Conn.	W
370	500	220–400	550	d.c.	Brass Mill	Geared	1913	Scoville Manufacturing Co.	Waterbury, Conn.	W
371	500	220–400	550	d.c.	Brass Mill	Geared	1913	Scoville Manufacturing Co.	Waterbury, Conn.	W
372	500	234	2200	60	Tube Mills	Coupled	1922	Pittsburgh Steel Products Co.	Allenport, Pa.	CW
373	500–330	242–161	440	25	16″ and 10″ Merchant Mill	Direct & Rope	1913	Kansas City Bolt & Nut Co.	Kansas City, Mo.	W
374	500	244	2200	25	10″ Merchant Mill	Direct	1908	Bethlehem Steel Co.	Johnstown, Pa.	W
375	500–500	250–325	230	d.c.	8″ Hoop Mill	Direct	1909	Atlantic Steel Co.	Atlanta, Ga.	GE
376	500	250–500	230	d.c.	9″ Hoop Mill Finishing	Direct	1914	Sharon Steel Hoop Co.	Sharon, Pa.	W
377	500	250	440	25	10″ Bar Mill	Geared	1917	Simonds Manufacturing Co.	Lockport, N. Y.	GE
378	500	250	2200	60	Tube Mill	Coupled	1918	Pittsburgh Steel Products Co.	Allenport, Pa.	CW
379	500	250	2200	60	Tube Mill	Geared	1918	Pittsburgh Steel Products Co.	Allenport, Pa.	CW
380	500	250	6600	25	Sheet Mill Cold Rolls	Geared	1919	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
381	500	250–350	600	d.c.	9″ Merchant Mill	Direct	1921	Missouri Rolling Mill Co.	St. Louis ,Mo.	W
382	500	250–600	250	d.c.	12-9″ Mill	Coupled	1925	Bethlehem Steel Co.	Johnstown, Pa.	AC
383	500	267–800	230	d.c.	Hot Merchant Mill	Geared	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
384	500	267–800	230	d.c.	Hot Merchant Mill	Direct	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
385	500	267–800	230	d.c.	Hot Merchant Mill	Direct	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
386	500	267–800	230	d.c.	Hot Merchant Mill	Direct	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
387	500	267–800	230	d.c.	Hot Merchant Mill	Geared	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
388	500	290	4000	60	8″ Merchant Mill	Direct	1920	Calumet Steel Co.	Cicago, Ill.	W
389	500	290	2200	25	Brass Mill	Geared	1920	American Brass Co.	Buffalo, N. Y.	W
390	500	300	2200	60	Sheet Mill		1915	U. S. Aluminum Co.	New Kensington, Pa.	AC
391	500	300	2200	60	Sheet Mill		1915	U. S. Aluminum Co.	New Kensington, Pa.	AC

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
392	500	300	2200	60	Sheet Mill		1915	U. S. Aluminum Co.	New Kensington, Pa.	AC
393	500	300	2200	60	Squeezer	Geared	1919	Pacific Coast Steel Co.	Seattle, Wash.	AC
394	500	300	2200	60	Bar Mill	Coupled	1920	Ft. Wayne Rolling Mill Co.	Ft. Wayne, Ind.	AC
395	500	300-450	230	d.c.	Lap Welding Mill	Coupled	1923	Gary Tube Co.	Gary, Ind.	AC
396	500	320	2200	60	12" Merchant Mill	Geared	1919	Baltimore & Ohio Railroad	Cumberland, Md.	W
397	500-500	327-200	440	60	9" Merchant Mill	Direct	1913	Bourne-Fuller Co.	Cleveland, Ohio	GE
398	500	350	2200	60	Cold Rolling Mill	Geared	1916	Mansfield Sheet & Tin Plate Co.	Mansfield, Ohio	W
399	500	350	440	60	Cold Rolling Mill	Geared	1916	Andrews Steel Co.	Newport, Ky.	W
400	500	360	2200	25	8" Merchant Mill	Direct	1913	Bethlehem Steel Co.	Johnstown, Pa.	W
401	500	360	2200	60	Tube Mill	Geared	1915	American Brass Company	Waterbury, Conn.	GE
402	500	360	2200	60	16" Bar Mill	Geared	1915	Tennessee Coal, Iron & R. R. Co.	Bessemer, Ala.	GE
403	500	360	2200	60	Copper Mill	Geared	1917	Anaconda Copper Mining Co.	Black Eagle, Mont.	GE
404	500	360	2200	60	Sheet Mill, Cold Rolls	Geared	1920	Central Steel Co.	Massillon, Ohio	GE
405	500	360	2200	60	Sheet Mill, Cold Rolls	Geared	1920	Central Steel Co.	Massillon, Ohio	GE
406	500	360	2200	60	Sheet Mill, Cold Rolls	Geared	1920	Republic Iron & Steel Co.	Youngstown, Ohio	GE
407	500	360	2200	60	Billet Piercing Mill	Geared	1922	Weldless Tube Co.	Wooster, Ohio	GE
408	500	360	440	60	Brass Mill	Direct	1923	Rome Brass and Copper Co.	Rome, N. Y.	GE
409	500	360	440	60	Brass Mill	Direct	1923	Rome Brass and Copper Co.	Rome, N. Y.	GE
410	500	360-612	600	d.c.	Reversing Hot Mill	Geared	1925	Mich. Copper & Brass Co.	Detroit, Mich.	GE
411	500	365	440	25	Copper Rolling Mill	Rope	1922	Baltimore Copper Smelt.& Roll.Co.	Baltimore, Md.	W
412	500	368	2200	25	Brass Mill	Geared	1920	American Brass Company	Kenosha, Wis.	W
413	500	375	2200	25	Wheel Mill	Geared	1913	Bethlehem Steel Co.	Johnstown, Pa.	AC
414	500	375	2300	25		Geared	1919	Buffalo Copper & Brass Co.	Buffalo, N. Y.	AC
415	500	375	2300	25		Geared	1925	Buffalo Copper & Brass Co.	Buffalo, N. Y.	AC
416	500-500	400-600	230	d.c.	Hoop Mill	Geared	1920	Atlantic Steel Co.	Atlanta, Ga.	GE
417	500	435	440	60	8" Merchant Mill	Rope	1911	Carnegie Steel Co. Painter Mills	Pittsburgh, Pa.	W
418	500	435	440	60	8" Merchant Mill	Rope	1912	Carnegie Steel Co. Painter Mills	Pittsburgh, Pa.	W
419	500	435	440	60	8" Merchant Mill	Rope	1912	Carnegie Steel Co. Painter Mills	Pittsburgh, Pa.	W
420	500	435	440	60	9" Merchant (Fin.) Mill	Belted	1914	Carnegie Steel Co. Painter Mills	Pittsburgh, Pa.	W
421	500	435	440	60	10" Merchant Mill	Belted	1914	Carnegie Steel Co. Painter Mills	Pittsburgh, Pa.	W
422	500	435	2200	60	Merchant Mill	Geared	1916	Seymour Manufacturing Co.	Waterbury, Conn.	W
423	500	440	2200	60	Copper Rod Mill	Geared	1923	American Brass Company	Kenosha, Wis.	W
424	500	440	2200	60	Bar Mill	Geared	1924	Universal Steel Co.	Bridgeville, Pa.	AC
425	500	440	4000	60	Bar Mill	Coupled	1923	Bryden Neverslip Co.	Catasauqua, Pa.	AC
426	500	442	2200	60	Cold Rolling Mill	Geared	1922	Follansbee Bros. Co.	Toronto, Ohio	W
427	500	450	440	60	Bar Mill	Geared	1910	Chase Rolling Mills Co.	Waterbury, Conn.	GE
428	500	450	440	60	Bar Mill	Geared	1910	Chase Rolling Mills Co.	Waterbury, Conn.	GE
429	500	450	550	60	12" Cold Roll Mill	Geared	1914	Worcester Pressed Steel Co.	Worcester, Mass.	GE
430	500	450	440	60	16" Bar Mill	Geared	1914	Carbon Steel Co.	Pittsburgh, Pa.	GE
431	500	450	2200	60	Brass Mill	Geared	1915	Scoville Manufacturing Co.	Waterbury, Conn.	GE
432	500	450	2200	60	Brass Mill	Geared	1915	Scoville Manufacturing Co.	Waterbury, Conn.	GE
433	500	450	2200	60	Brass Mill	Geared	1915	Scoville Manufacturing Co.	Waterbury, Conn.	GE
434	500	450	2200	60	Brass Mill	Geared	1915	Chase Metal Works	Waterbury, Conn.	GE
435	500	450	2200	60	Billet Mill	Geared	1915	International High Speed Steel Co.	Rockaway, N. J.	GE
436	500	450	2200	60	Sheet Mill	Geared	1915	American Brass Company	Torrington, Conn.	GE
437	500	450	2200	60	Tube Mill	Geared	1916	Ohio Seamless Tube Co.	Shelby, Ohio	GE
438	500	450	440	60	20" Copper Mill	Geared	1916	Waclark Wire Co.	Elizabeth, N. J.	GE
439	500	450	440	60	Wire Mill	Geared	1916	Waclark Wire Co.	Elizabeth, N. J.	GE
440	500	450	2300	60	Merchant Mill	Geared	1916	Pacific Coast Steel Co.	San Francisco, Cal.	GE
441	500	450	2200	60	Copper Mill	Geared	1917	Anaconda Copper Mining Co.	Black Eagle, Mont.	GE
442	500	450	2200	60	Copper Mill	Geared	1917	Anaconda Copper Mining Co.	Black Eagle, Mont.	GE
443	500	450	2200	60	Brass Mill	Geared	1917	American Brass Company	Waterbury, Conn.	GE
444	500	450	2200	60	Brass Mill	Geared	1917	American Brass Company	Waterbury, Conn.	GE
445	500	450	440	60	20" Copper Mill	Coupled	1918	Waclark Wire Co.	Bayway, N. J.	CW
446	500	450	2200	60	Tube Mill	Geared	1919	Ohio Seamless Tube Co.	Shelby, Ohio	GE
447	500	450	440	60	Brass Sheet Mill	Geared	1920	Detroit Copper & Brass Co.	Detroit, Mich.	GE
448	500	450	2200	60	Brass Mill	Geared	1921	American Brass Company	Torrington, Conn.	GE
449	500	450	2200	60	Brass Mill	Geared	1921	American Brass Company	Torrington, Conn.	GE
450	500	450	2200	60	14" Roughing Mill	Geared	1921	International Nickel Co.	Huntington, W. Va.	AC
451	500	450	2200	60	9" Finishing Mill	Geared	1921	International Nickel Co.	Huntington, W. Va.	AC
452	500	450	2200	60	Hoop Mill	Geared	1912	Carnegie Steel Co.	Pittsburgh, Pa.	CW
453	500	450	2200	60	Bar Mill	Geared	1925	Indianapolis Steel Products Co.	Indianapolis, Ind.	AC
454	500	450	2200	60	Copper Mill	Direct	1925	Anaconda Copper Mining Co.	Black Eagle, Mont.	GE
455	500	480-250	230	d.c.	Merchant Mill	Coupled	1923	Buffalo Bolt Co.	N. Tonawanda, N. Y.	CW
456	500	487	6600	25	8" Merchant Mill	Direct	1913	Minnesota Steel Co.	Duluth, Minn.	W
457	500	500	2300	25	Milling Machine	Direct	1914	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
458	500-500-500	500-375-265	2200	25	10" Merchant Mill	Direct & Belt	1916	Donner Steel Co.	Buffalo, N. Y.	GE
459	500	500	550	25	Tube Mill	Geared	1917	Baltimore Tube Co.	Baltimore, Md.	W
460	500	500	2300	25	18" Merchant Mill	Geared	1919	Halcomb Steel Co.	Syracuse, N. Y.	GE
461	500	500	2200	25	16" Bar Mill	Geared	1919	Hammond Steel Co.	Solvay, N. Y.	GE
462	500	500	2200	25	Continuous Tube Mill	Coupled	1915	Pittsburgh Steel Products Co.	Monessen, Pa.	CW
463	500	500	2200	25	Experimental Alum.	Geared	1925	U. S. Aluminum Co.	Massena, N. Y.	GE
464	500	514	440	60	Bar Mill	Chain	1915	Simmons Mfg. Co.	Kenosha, Wis.	AC
465	500	514	2200	60	Bar Mill	Rope	1917	Henry Disston & Son	Philadelphia, Pa.	AC
466	500	514	550	60	18" Copper Mill	Geared	1919	American Brass Co.	Hastings, N. Y.	GE
467	500	514	2200	60	Bar Mill	Geared	1919	Judson Mfg. Co.	Oakland, Calif.	AC
468	500	514	2200	60	Bar Mill	Geared	1920	Metals Production Equipment Co.	Springfield, Mass.	AC
469	500	514	2200	60	Bar Mill	Geared	1920	Metals Production Equipment Co.	Springfield, Mass.	AC
470	500	514	2200	60	Bar Mill	Geared	1920	Metals Production Equipment Co.	Springfield, Mass.	AC
471	500	514	2200	60	Brass Mill	Geared	1922	Western Cartridge Co.	East Alton, Ill.	GE
472	500	575-865	2200	60	10" Merchant Mill	Geared	1921	International Nickel Co.	Huntington, W. Va.	W
473	500	575-865	2200	60	10" Merchant Mill	Geared	1921	International Nickel Co.	Huntington, W. Va.	W
474	500	575	2200	60	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
475	300	575	2200	60	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
476	500	575	2200	60	Copper Rod Mill	Geared	1923	American Brass Company	Kenosha, Wis.	W
477	500	585	2200	60	Copper Rod Mill	Geared	1922	Eugene F. Phillips Elec. Wks., Ltd.	Montreal, Que.	W
478	500	600	2200	60			1913	Cleveland Brass & Copper Co.	Cleveland, Ohio	AC
479	500	600	2200	60	Brass Mill	Geared	1917	American Brass Company	Waterbury, Conn.	GE
480	500	600	2200	60	Brass Mill	Geared	1917	American Brass Company	Waterbury, Conn.	GE
481	500	600	2200	60	Brass Mill	Geared	1917	American Brass Company	Torrington, Conn.	GE
482	500	600	2200	60	Bar Mill	Belted	1919	Joslyn Mfg. Co.	Chicago, Ill.	AC
483	500	600	2200	60	Merchant Mill	Geared	1923	Taunton-New Bedford Copper Co.	Taunton, Mass.	GE
484	500	600	2200	60	Copper Rolling Mill	Geared	1923	American Brass Company	Torrington, Conn.	GE
485	500	600	2200	60	Reducing Pipe Mill	Geared	1925	Ohio Seamless Tube Co.	Shelby, Ohio	GE
486	500	600	2200	60	Continuous Sheet Mill	Geared	1926	American Rolling Mill Co.	Ashland, Ky.	W
487	500	600	4600	60	Reducing Mill	Geared	1926	Detroit Seamless Steel Tube Co.	Detroit, Mich.	AC
488	500	730-485	2200	50	8" Merchant Mill	Geared	1919	Southern California Iron & Steel Co.	Los Angeles, Cal.	W
489	500-250	750-375	3000	50	Merchant Mill	Geared	1923	Consolidated Rolling Mills Co.	Mexico City, Mex.	GE
490	500-400	775-585	550	40	10" Merchant Mill	Geared	1917	Cohoes Rolling Mill Co.	Cohoes, N. Y.	W
491	500	870	2200	60	16" Merchant Mill	Geared	1919	McConway-Torley Co.	Pittsburgh, Pa.	W
492	500-400	875-700	550	60	10"-14" Merchant Mill	Geared	1916	The Texas Steel Co.	Fort Worth, Texas	W
493	500	884	2200	60	9" Rougher	Geared	1925	Crucible Steel Co.	Atha Works	W
494	500	888-540	6600	60	11" Finishing Stand	Coupled		Tennessee Coal, Iron & R. R. Co.	Birmingham, Ala.	AC
495	500-250	890-513 440-256	2200	60	10" Merchant Mill	Geared	1919	Hunter Crucible Steel Co.	Cleveland, Ohio	W
496	500	900	440	60	10" Merchant Mill	Geared	1925	Latrobe Elec. Steel Co.	Latrobe, Pa.	GE
497	525	125	2200	25	Merchant Mill	Rope	1910	American Sheet & Tin Plate Co.	Gary, Ind.	GE
498	525	125	2200	25	Merchant Mill	Rope	1910	American Sheet & Tin Plate Co.	Gary, Ind.	GE
499	550	120-300	250	d.c.	10" Merchant Mill	Direct	1923	Firth Sterling Steel Co.	McKeesport, Pa.	W
500	550	320-206	2200	60	10" Hoop Mill	Direct	1917	Atlantic Steel Co.	Atlanta, Ga.	W

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
501	550	336–588	600	d.c.	9″ Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
502	550	420–714	600	d.c.	9″ Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
503	550	420–714	600	d.c.	9″ Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
504	550	575	2200	60	16″ Skelp Mill	Geared	1919	Tyler Tube & Pipe Co.	Washington, Pa.	W
505	550–360	875–585	2200	60	12″ Merchant Mill	Geared	1918	Norfolk & Western Railroad	Roanoke, Va.	W
506	550	880	2200	60	16″ Merchant Mill	Geared	1919	Danville Structural Tubing Co.	Danville, Pa.	W
507	550	880	2200	60	Merchant Mill	Geared	1921	Danville Structural Tubing Co.	Danville, Pa.	W
508	575	300–214	6600	25	10″ Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
509	575–575	375–250	6600	25	8″ Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
510	600	150	550	60	Sheet Mill, Cold Rolls	Rope	1909	Weirton Steel Co.	Weirton, W. Va.	GE
511	600–600	150–250	575	d.c.	6″ Hot Strip Mill	Direct	1913	American Steel & Wire Co.	Cleveland, Ohio	GE
512	600	185–470	600	d.c.	10″ Strip Mill	Direct	1926	LacLede Steel Co.	Alton, Ill.	W
513	600	200–300	230	d.c.	9″ Merchant Mill	Direct	1914	United Alloy Steel Corporation	Canton, Ohio	W
514	600	200–300	230	d.c.	9″ Merchant (Fin.) Mill	Direct	1915	United Alloy Steel Corporation	Canton, Ohio	W
515	600–600	214– 93	6600	25	12″ Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
516	600	214	440	25			1920	Baltimore Copper S. & R. Co.	Baltimore, Md.	AC
517	600	214	440	25			1920	Baltimore Copper S. & R. Co.	Baltimore, Md.	AC
518	600–600	225–425	550	d.c.	12″ Hot Strip Mill	Direct	1916	American Steel & Wire Co.	Cleveland, Ohio	GE
519	600	270–635	600	d.c.	10″ Strip Mill	Direct	1926	LacLede Steel Co.	Alton, Ill.	W
520	600–600	300–214	2200	25	Bar Mill	Coupled & Rope	1914	St. Louis Screw Co.	St. Louis, Mo.	AC
521	600	300–214	2200	25	Bar Mill	Chain	1914	St. Louis Screw Co.	St. Louis, Mo.	AC
522	600	300	2200	25	Muck Mill	Chain	1914	St. Louis Screw Co.	St. Louis, Mo.	AC
523	600	300	2200	60	Sheet Mill	Geared	1917	Universal Rolling Mill Co.	Bridgeville, Pa.	AC
524	600	300	2200	60	Tube Mill	Coupled	1918	Pittsburgh Steel Products Co.	Allenport, Pa.	CW
525	600	300	440	25	Tandem Plate Mill	Rope	1920	Baltimore Copper S. & R. Co.	Baltimore, Md.	AC
526	600	300	440	25	Tandem Plate Mill	Rope	1920	Baltimore Copper S. & R. Co.	Baltimore, Md.	AC
527	600	300	2200	60	Tube Mill	Coupled	1917	Pittsburgh Steel Products Co.	Monessen, Pa.	CW
528	600	300	550	60	Copper Rod Mill	Direct	1926	American Brass Co.	Ansonia, Conn.	GE
529	600	300–330	230	d.c.	10″ Bar Mill	Coupled	1921	Universal Steel Co.	Bridgeville, Pa.	CW
530	600–400–200	321–214–107	440	25	9″ Merchant Mill	Direct	1923	Halcomb Steel Co.	Syracuse, N. Y.	GE
531	600	360	2200	60	Tube Mill	Geared	1914	Standard Seamless Tube Co.	Economy, Pa.	GE
532	600	360	2200	60	10″ Hot Strip Mill	Direct	1919	Superior Steel Co.	Carnegie, Pa.	GE
533	600	360–440	500	d.c.	Aluminum Mill	Geared	1919	U. S. Aluminum Co.	Marysville, Tenn.	W
534	600	360–440	500	d.c.	Aluminum Mill	Geared	1919	U. S. Aluminum Co.	Marysville, Tenn.	W
535	600	360–440	500	d.c.	Aluminum Mill	Geared	1919	U. S. Aluminum Co.	Marysville, Tenn.	W
536	600	360	440	60	Copper Mills	Geared	1923	Am. Insulated Wire & Cable Co.	Chicago, Ill.	GE
537	600	360	550	60	Copper Rod Mill	Direct	1926	American Brass Co.	Ansonia, Conn.	GE
538	600	365	6600	25	10″ Merchant Mill	Direct	1913	Minnesota Steel Co.	Duluth, Minn.	W
539	600	368	6600	25	18″–21″ Roughing Mill	Geared	1924	Pittsburgh Crucible Steel Co.	Midland, Pa.	AC
540	600–400	375–210	2200	25	9″ Merchant Mill	Direct	1912	Gulf States Steel Co.	Birmingham, Ala.	GE
541	600	390	440	60	20″ Merchant Mill	Geared	1916	Stanley Works	New Haven, Conn.	W
542	600	390	440	60	Cold Strip Mill	Geared	1917	Stanley Works	New Haven, Conn.	W
543	600	400–800	250	d.c.	18″ Merchant Mill	Geared	1926	Pittsburgh Crucible Steel Co.	Midland, Pa.	GE
544	600	440	2200	60	10″ Rod Mill	Direct	1917	Wickwire Spencer Steel Corp.	Palmer, Mass.	W
545	600	450	2200	60	Aluminum Strip Mill	Geared	1914	Cleveland Metal Products Co.	Cleveland, Ohio	GE
546	600–600–600	469–375–281	2200	25	8″ Merchant Mill	Direct	1919	Donner Steel Co.	Buffalo, N. Y.	GE
547	600	485	2200	25	10″ Merchant Mill	Direct	1912	Laclede Steel Co.	Alton, Ill.	W
548	600	485	440	25	20″ Merchant Mill	Geared	1915	Hess Steel Corporation	Baltimore, Md.	W
549	600	485	550	25	Piercing Mill	Geared	1915	Baltimore Tube Co.	Baltimore, Md.	W
550	600	490	2200	25	16″ Bar Roughing Mill	Geared	1919	Scullin Steel Co.	St. Louis, Mo.	W
551	600	500	2200	60	20″ Merchant Mill	Geared	1916	Carpenter Steel Co.	Reading, Pa.	W
552	600	500	2200	60	16″ Merchant Mill	Geared	1917	Central Steel Co.	Massillon, Ohio	W
553	600	500	440	25	16″ Merchant Mill	Geared	1919	Buffalo Bolt Co.	N.Tonawanda, N. Y.	GE
554	600	500	575	25	Brass Sheet Mill	Geared	1920	Baltimore Tube Co.	Baltimore, Md.	GE
555	600	500	575	25	Brass Sheet Mill	Geared	1920	Baltimore Tube Co.	Baltimore, Md.	GE
556	600–400	514–300	2200	60	Rod Mill	Direct	1912	Northern Steel Co.	Medford, Mass.	GE
557	600	514	2200	60	Brass Mill	Geared	1922	Western Cartridge Co.	East Alton, Ill.	GE
558	600	514	2200	60	18″ Bar Mill	Geared	1926	American Nickel Corp.	Hyde, Pa.	GE
559	600	585–325	550	40	16″ Merchant Mill	Geared	1917	Cohoes Rolling Mill Co.	Cohoes, N. Y.	W
560	600–500–400	600–500–400	2200	25	Merchant Mill, No. 10	Direct	1916	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
561	600–300	600–300	550	60	9″ Bar Mill No. 2	Geared	1926	Ludlum Steel Co.	Watervliet, N. Y.	GE
562	600	600	4000	60	Brass Mill	Geared	1919	Bristol Brass Co.	Bristol, Conn.	GE
563	600	600	2200	60	Copper Mill	Geared	1920	American Brass Co.	Waterbury, Conn.	GE
564	600	600	440	60	16″ Merchant Mill		1920	Wayne Steel Co.		AC
565	600	600	2300	60		Coupled		Fulton Steel Corp.	Fulton, N. Y.	AC
566	600	600	2200	60	Brass Mill	Geared	1921	American Brass Co.	Waterbury, Conn.	GE
567	600	600	550	60	Copper Rod Mill	Geared	1925	Phillips Wire Co.	Pawtucket, R. I.	GE
568	600–600	720–360	6600	60	Hot Strip Mill	Geared	1916	Weirton Steel Co.	Weirton, W. Va.	AC
569	600	885	2200	60	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
570	600	885	2200	60	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
571	600	900	440	60	Copper Rod Mill	Geared	1920	Western Elec. Co.	Hawthorne, Ill.	GE
572	600	900	550	60	Brass Mill	Geared	1920	American Brass Co.	Ansonia, Conn.	GE
573	600	900	440	60	Copper Mill	Geared	1923	Am. Insulated Wire & Cable Co.	Chicago, Ill.	GE
574	650	160	440	60	14″ Guide Mill	Coupled		Withrow Steel Co.	Neville Island, Pa.	AC
575	650	184	6600	25	18″ Merchant Mill	Direct	1909	Indiana Steel Co.	Gary, Ind.	W
576	650	184	6600	25	14″ Merchant Mill	Direct	1909	Indiana Steel Co.	Gary, Ind.	W
577	650	200	440	60	14″ Guide Mill	Coupled		Withrow Steel Co.	Neville Island, Pa.	AC
578	650	210	6600	25	12″ Merchant Mill	Geared	1909	Indiana Steel Co.	Gary, Ind.	W
579	650	225–400	600	d.c.	Seamless Mill	Geared	1925	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
580	650	225–400	600	d.c.	Seamless Mill	Geared	1925	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
581	650	225–400	600	d.c.	Seamless Mill	Geared	1925	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
582	650	293	2200	60	9″ Merchant Mill	Rope	1919	Harrisburg Pipe & Pipe Bending Co.	Harrisburg, Pa.	W
583	650	500	6600	25	10″ Merchant Mill	Direct	1916	Illinois Steel Co.	Gary, Ind.	GE
584	650	500	6600	25	10″ Merchant Mill	Direct	1916	Illinois Steel Co.	Gary, Ind.	GE
585	650	750	2200	25			1913	Bethlehem Steel Co.	Johnstown, Pa.	AC
586	650	750	2200	25				Bethlehem Steel Co.	Johnstown, Pa.	AC
587	700	86	450	d.c.	Shear Intensifier	Direct	1918	Tennessee Coal, Iron & R. R. Co.	Fairfield, Ala.	GE
588	700	130–310	600	d.c.	10″ Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
589	700	130–310	600	d.c.	10″ Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
590	700	187	2200	25	14″ Merchant Mill	Direct	1920	Donner Steel Co.	Buffalo, N. Y.	GE
591	700	200	240	d.c.	Pontoon Mill	Direct	1926	M. W. Kellogg	Newark, N. J.	CW
592	700	200	240	d.c.	Pontoon Mill	Direct	1926	M. W. Kellogg	Newark, N. J.	CW
593	700	210–660	600	d.c.	10″ Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
594	700	210–660	600	d.c.	10″ Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
595	700	250	2200	25	18″ Bar Mill	Rope	1911	Dillworth Porter Co.	Pittsburgh, Pa.	GE
596	700	240–450	250	d.c.	9″ Merchant Mill	Direct	1925	Crucible Steel Co.	Pittsburgh, Pa.	GE
597	700	295	440	60		Geared	1925	Witherow Steel Co.	Neville Island, Pa.	AC
598	700	300–400	230	d.c.	Lap Welding Mill	Coupled	1923	Gary Tube Co.	Gary, Ind.	AC
599	700	320	2200	60	Sheet and Jobbing Mill	Direct	1917	Carbon Steel Co.	Pittsburgh, Pa.	W
600	700	360	440	60	Brass Mill	Chain		Detroit Copper & Brass Co.	Detroit, Mich.	AC
601	700	364	2200	25	8″ Merchant Mill	Direct	1912	Laclede Steel Co.	Alton, Ill.	W
602	700	390	2200	60	18″ Bar Mill	Geared	1922	Dilworth Porter Co.	Pittsburgh, Pa.	W
603	700–600–400	400–300–200	2200	25	Merchant Mill, No. 10	Direct	1916	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
604	700–600–400	400–300–200	2200	25	Merchant Mill, No. 10	Belt	1916	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
605	700	440	2200	60	16″ Mill	Geared	1926	Connors Steel Co.	Birmingham, Ala.	AC
606	700	480–290	2200	25	12″ Merchant Mill	Geared	1916	Halcomb Steel Co.	Syracuse, N. Y.	W
607	700	490	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
608	700	490	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
609	700	502	2200	60	Cold Rolling Mill	Direct	1919	Carnahan Tin Plate & Steel Co.	Canton, Ohio	W
610	700	585	2200	60	Copper Rod Mill	Geared	1922	Eugene F. Phillips Elec. Wks., Ltd.	Montreal, Que.	W

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
611	700	600	2200	60	14" Bar Mill	Coupled	1921	Universal Steel Co.	Bridgeville, Pa.	CW
612	700	730-490	4000	25	14" Merchant Mill	Geared	1918	Atlas Steel Corporation	Dunkirk, N. Y.	W
613	700	735	4000	25	14" Merchant Mill	Geared	1921	Atlas Steel Corporation	Dunkirk, N. Y.	W
614	700	735	440	25	Copper Rolling Mill	Geared	1924	Baltimore Cop.Smelt. & Rolling Co.	Baltimore, Md.	W
615	700	735	440	25	Copper Rolling Mill	Geared	1924	Baltimore Cop.Smelt. & Rolling Co.	Baltimore, Md.	W
616	700	735	440	25	Copper Rolling Mill	Geared	1924	Baltimore Cop.Smelt. & Rolling Co.	Baltimore, Md.	W
617	700	750	2200	25		Geared		Bethlehem Steel Company	Buffalo, N. Y.	AC
618	700	750	2200	25				Bethlehem Steel Company	Buffalo, N. Y.	AC
619	700	875	2200	60	Cont. Hoop (Rough). Mill	Geared	1920	Connors Steel Co.	Birmingham, Ala.	W
620	700	875	2200	60	Cont. Hoop (Intermed.)	Geared	1920	Connors Steel Co.	Birmingham, Ala.	W
621	700	880-530	2200	60	10" Finishing Mill	Geared	1923	Crucible Steel Works of America, Park Works	Pittsburgh, Pa.	W
622	720	395-825	600	d.c.	10" Strip Mill	Direct	1926	LacLede Steel Co.	Alton, Ill.	W
623	720	480-1030	600	d.c.	10" Strip Mill	Direct	1926	LacLede Steel Co.	Alton, Ill.	W
624	750	94	2200	25	Sheet Mill	Rope	1912	West Penn. Steel Co.	Brackenridge, Pa.	GE
625	750	100	2200	25	Tin Mill, Cold Rolls	Geared	1915	American Sheet & Tin Plate Co.	Gary, Ind.	GE
626	750	100	2200	25	Tin Mill, Cold Rolls	Geared	1915	American Sheet & Tin Plate Co.	Gary, Ind.	GE
627	750	120-210	250	d.c.	14" Finishing Mill	Coupled	1923	Pittsburgh Crucible Steel Co.	Midland, Pa.	AC
628	750	120-210	250	d.c.	14" Finishing Mill	Coupled	1923	Pittsburgh Crucible Steel Co.	Midland, Pa.	AC
629	750	125	2200	25	Tin Mill, Cold Rolls	Rope	1915	McKeesport Tin Plate Co.	McKeesport, Pa.	GE
630	750	125	2200	25	Tin Mill, Cold Rolls	Rope	1915	McKeesport Tin Plate Co.	McKeesport, Pa.	GE
631	750	130	550	d.c.	Wheel Mill	Direct	1915	Carnegie Steel Co.	McKees Rocks, Pa.	GE
632	750	150-250	600	d.c.	14" Merchant Mill	Direct	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
633	750	160	550	d.c.	Wheel Mill	Direct	1916	Edgewater Steel Co.	Oakmont, Pa.	GE
634	750	160	550	d.c.	Wheel Mill	Direct	1916	Edgewater Steel Co.	Oakmont, Pa.	GE
635	750	160	550	d.c.	Wheel Mill	Direct	1919	Edgewater Steel Co.	Oakmont, Pa.	GE
636	750-750	225-168	440	60	Bar Mill	Coupled	1921	Simmons Mfg. Co.	Kenosha, Wis.	AC
637	750-750	235-325	230	d.c.	Piercing Mill	Geared	1914	Pittsburgh Seamless Tube Co.	Beaver Falls, Pa.	GE
638	750	240	2200	60	Sheet Mill, Cold Rolls	Geared	1919	Wheeling Steel Corp.	Stuebenville, Ohio	GE
639	750	250	2200	25	Bar Mill	Geared	1914	Bethlehem Steel Co.	Johnstown, Pa.	AC
640	750	250	2200	60	Tin Mill	Geared	1915	Weirton Steel Co.	Weirton, W. Va.	W
641	750	250	440	25	Bar Mill	Coupled	1920	Simonds Mfg. Co.	Lockport, N. Y.	AC
642	750	257	2200	60	10" Strip Mill	Coupled	1923	Pittsburgh Steel Co.	Glassport, Pa.	CW
643	750	277	2200	60	18" Merchant Mill	Geared	1915	Pacific Coast Steel Co.	San Francisco, Cal.	GE
644	750	295	6600	25	Seamless Mill	Geared	1923	Gary Tube Company	Gary, Ind.	W
645	750	300-600	230	d.c.	Cold Rolling Mill	Geared	1924	International Nickel Co.	Huntington, W. Va.	AC
646	750	300-600	230	d.c.	Bliss Cold Roll Drive	Geared	1926	International Nickle Co.	Huntington, W. Va.	AC
647	750	353	2200	60	Tube Rolling Mill	Direct	1915	National Tube Co.	Ellwood City, Pa.	W
648	750	353	2200	60	Tube Rolling Mill	Direct	1915	National Tube Co.	Ellwood City, Pa.	W
649	750	353	2200	60	Tube Rolling Mill	Direct	1915	National Tube Co.	Ellwood City, Pa.	W
650	750	353	2200	60	Piercing Mill	Direct	1915	National Tube Co.	Ellwood City, Pa.	W
651	750	353	2200	60	Piercing Mill	Direct	1915	National Tube Co.	Ellwood City, Pa.	W
652	750	353	2200	60	Piercing Mill	Direct	1915	National Tube Co.	Ellwood City, Pa.	W
653	750	353	4600	60	Brass Mill	Geared	1924	Scoville Mfg. Co.	Waterbury, Conn.	W
654	750-625-460	360-300-220	6600	25	12" Hot Strip Mill	Direct	1920	Illinois Steel Co.	Gary, Ind.	GE
655	750	360	4600	60			1921	Detroit Copper & Brass Co.	Detroit, Mich.	AC
656	750-750	360-860	600	d.c.	14" Continuous Mill	Geared	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
657	750	443	4600	60		Coupled	1921	Detroit Copper & Brass Co.	Detroit, Mich.	AC
658	750-600-440	473-375-278	6600	25	12" Hot Strip Mill	Direct	1920	Illinois Steel Co.	Gary, Ind.	GE
659	750	500	230	d.c.	14" Rail Rerolling Mill	Geared	1925	Ford Motor Co.	River Rouge, Mich.	AC
660	750	505	2200	60		Geared	1924	Kansas City Bolt & Nut Co.	Kansas City, Mo.	AC
661	750	514	2200	60	Wire Red Mill	Geared	1917	Kokomo Steel & Wire Co.	Kokomo, Ind.	AC
662	750	514	440	60	14" Merchant Mill	Geared	1920	Withrow Steel Co.	Neville Island, Pa.	AC
663	750	514	550	60	10" and 9" Copper Mills	Geared	1919	American Brass Co.	Hastings, N. Y.	GE
664	750	514	550	60	10" and 9" Copper Mills	Geared	1919	American Brass Co.	Hastings, N. Y.	GE
665	750	514	2200	60	Merchant Mill	Geared	1920	W. M. Lewis	Indianapolis, Ind.	AC
666	750	600	4000	60	Brass Mill	Geared	1919	Bristol Brass Co.	Bristol, Conn.	GE
667	750	720	2200	60	Zinc Rolling Mill	Geared	1923	American Zinc Products Co.	Greencastle, Ind.	GE
668	750	720	550	60	Brass Rolling Mill	Geared	1925	American Brass Co.	Ansonia, Conn.	GE
669	770-700-630	540-490-440	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
670	800	0-37-70	500	d.c.	Plate Mill	Coupled	1919	Universal Rolling Mill Co.	Bridgeville, Pa.	AC
671	800	94	2200	25	18" Merchant Mill	Direct	1912	Gulf States Steel Co.	Birmingham, Ala.	GE
672	800	100	6600	25	16" Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
673	800	107	6600	25	Tube Rolling Mill	Coupled	1925	National Tube Co.	Lorain, Ohio	AC
674	800	109	2200	60	2-21" Rolls	Coupled	1924	Globe Steel Tube Co.	Milwaukee, Wis.	AC
675	800	163	2200	25	22" Merchant Blooming	Rope	1905	Ontario Iron & Steel Co.	Welland, Ont.	W
676	800	175-350	600	d.c.	12" Alloy Bar Mill	Direct	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
677	800	175-350	600	d.c.	12" Alloy Bar Mill	Direct	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
678	800	189	2200	60	Merchant Mill	Direct	1925	Pacific Coast Steel Co.	San Francisco, Cal.	CW
679	800	200-300	500	d.c.	Piercing Mill	Rope	1913	Pittsburgh Steel Products Co	Monessen, Pa.	W
680	800	200-300	500	d.c.	Piercing Mill	Direct	1912	Pittsburgh Steel Products Co.	Monessen, Pa.	W
681	800-800	200-400	600	d.c.	14" Hot Strip Mill	Direct	1920	Trumbull Steel Co.	Warren, Ohio	GE
682	800	200-400	250	d.c.	9" 7 Stand Mill	Coupled	1926	Crucible Steel Co. of America	Harrison, N. J.	AC
683	800	200-415	600	d.c.	12" Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	GE
684	800	200-415	600	d.c.	12" Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	GE
685	800	200-415	600	d.c.	12" Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	GE
686	800-800	214-167	6600	25	16" Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
687	800	214	2200	25	Sheet Mill	Geared	1919	American Sheet & Tin Plate Co.	Gary, Ind.	GE
688	800	214	2200	25	Sheet Mill	Geared	1919	American Sheet & Tin Plate Co.	Gary, Ind.	GE
689	800	220-150	2200	25	12" Bar (Finishing) Mill	Direct	1919	Scullin Steel Co.	St. Louis, Mo.	W
690	800	220-440	600	d.c.	12" Alloy Bar Mill	Direct	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
691	800	220-440	600	d.c.	12" Alloy Bar Mill	Direct	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
692	800	220-440	600	d.c.	12" Alloy Bar Mill	Direct	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
693	800	225	2200	60	Roughing Mill	Geared	1916	Standard Seamless Tube Co.	Economy, Pa.	GE
694	800-800	231-462	600	d.c.	14" Hot Strip Mill	Direct	1920	Trumbull Steel Co.	Warren, Ohio	GE
695	800	240-480	600	d.c.	12" Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	GE
696	800	250-500	230	d.c.	14" and 9" Hoop Mill	Direct	1914	Sharon Steel Hoop Co.	Sharon, Pa.	W
697	800	250	2200	60	Piercing Mill	Geared	1915	Timken Roller Bearing Co.	Canton, Ohio	W
698	800	250	2200	60	22" Bar Mill	Rope	1915	Timken Roller Bearing Co.	Canton, Ohio	W
699	800-800	256-512	600	d.c.	14" Hot Strip Mill	Direct	1920	Trumbull Steel Co.	Warren, Ohio	GE
700	800	257	2200	60	Bar Mill	Geared	1914	Standard Seamless Tube Co.	Economy, Pa.	GE
701	800	257	2200	60	12" Rod Mill	Belt	1915	Crucible Steel Co. of America	Harrison, N. J.	GE
702	800	257	2200	60	18" Merchant Mill	Geared	1919	Columbia Steel Co.	Pittsburgh, Cal.	GE
703	800	257	2200	60	Hot Strip Mill	Geared	1926	Standard Seamless Tube Co.	Economy, Pa.	GE
704	800	268	2200	60	14"-10" Merchant Mill	Rope	1912	United Alloy Steel Corporation	Canton, Ohio	W
705	800-800	275-550	600	d.c.	14" Hot Strip Mill	Direct	1920	Trumbull Steel Co.	Warren, Ohio	GE
706	800	275-550	700	d.c.	12" Merchant Mill	Geared	1925	Penn Seaboard Steel Co.	New Castle, Del.	GE
707	800	275-550	700	d.c.	12" Merchant Mill	Geared	1925	Penn Seaboard Steel Co.	New Castle, Del.	GE
708	800	275-550	700	d.c.	9" Merchant Mill	Direct	1925	Penn Seaboard Steel Co.	New Castle, Del.	GE
709	800	277	2200	60	Bar Mill	Geared	1918	Pacific Coast Steel Co.	San Francisco, Calif.	AC
710	800	292	2200	25	18" Tandem Billet Mill	Direct	1912	Laclede Steel Co.	Alton, Ill.	W
711	800	300	2200	60				Pittsburgh Steel Prod. Co.	Monessen, Pa.	AC
712	800-800	315-210	575	d.c.	6" Hot Strip Mill	Direct	1907	American Steel & Wire Co.	Cleveland, Ohio	GE
713	800	320	440	60	9" Merchant Mill	Belted	1914	Carnegie Steel Co. Painter Mills	Pittsburgh, Pa.	W
714	800	320	440	60	10" Merchant Mill	Belted	1914	Carnegie Steel Co. Painter Mills	Pittsburgh, Pa.	W
715	800	350	2200	60	24" Bull Head Rolls of Sheet Bar Mill	Geared	1915	Central Steel Co.	Massillon, Ohio	W
716	800	350	2200	60	Billet Mill	Geared	1915	Milton Manufacturing Co.	Milton, Pa.	W
717	800	350	2200	60	Aluminum Mill	Geared	1915	U. S. Aluminum Co.	Edgewater, N. J.	W
718	800	350-600	230	d.c.	Band Mill	Direct	1926	Sharon Steel Hoop Co.	Sharon, Pa.	CW
719	800	350-600	230	d.c.	Band Mill	Direct	1926	Sharon Steel Hoop Co.	Sharon, Pa.	CW

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
720	800	350–700	600	d.c.	20″ Merchant Breakd'wn)	Geared	1921	Driver Harris	Harrison, N. J.	W
721	800	350–750	600	d.c.	8″ Cont. Merchant Mill	Direct	1925	Inland Steel Co.	Indiana Harbor, Ind.	GE
722	800	353	2200	60	12″–5 Stand Merch. Mill	Belt	1924	United Steel Company	Everett, Wash.	W
723	800	353	440	50	8″ Copper Rod Mill	Direct	1923	Standard Underground Cable Co.	St. Louis, Mo.	W
724	800–400	360–180	550	60	Bar Mill	Geared	1926	Ludlum Steel Co.	Watervliet, N. Y.	GE
725	800–400	360–180	550	60	Bar Mill	Geared	1926	Ludlum Steel Col.	Warervliet, N. Y.	GE
726	800	360–440	500	d.c.	Aluminum Mill	Geared	1919	U. S. Aluminum Co.	Marysville, Tenn.	W
727	800	360–440	500	d.c.	Aluminum Mill	Geared	1919	U. S. Aluminum Co.	Marysville, Tenn.	W
728	800	367	2200	25	8″ Merchant Mill	Direct	1918	Donner Steel Co.	Buffalo, N. Y.	W
729	800	370	650	d.c.	Aluminum Mill	Direct	1917	U. S. Aluminum Co.	Niagara Falls, N. Y.	W
730	800	370–400	650	d.c.	Aluminum Mill	Direct	1919	U. S. Aluminum Co.	Niagara Falls, N. Y.	W
731	800	375	2200	25	Sheet Mill, Cold Rolls	Geared	1919	Eastern Rolling Mills Co.	Baltimore, Md.	GE
732	800	375	2200	25	Merchant Mill	Geared	1920	Bethlehem Steel Co.	Johnstown, Pa.	GE
733	800–800	390–260	575	d.c.	6″ Hot Strip Mill	Direct	1907	American Steel & Wire Co.	Cleveland, Ohio	GE
734	800	400–600	600	d.c.	16″ Merchant Mill	Geared	1921	Missouri Rolling Mills Co.	St. Louis, Mo.	W
735	800	410–720	230	d.c.	16″ Merchant (Rough.)	Geared	1923	Timken Roller Bearing Co.	Canton, Ohio	W
736	800	435	2200	60	No. 2 Hoop Mill	Geared	1925	Connors Steel Co.	Birmingham, Ala.	W
737	800	440	2200	60	18″ Merchant (Finishing)	Geared	1918	Canton Sheet Steel Co.	Canton, Ohio	W
738	800	443	2200	60	Roughing Mill	Coupled	1921	International Nickel Co.	Huntington, W. Va.	AC
739	800	450	2200	60	14″ Merchant Mill	Geared	1921	International Nickel Co.	Huntington, W. Va.	AC
740	800	450	2200	60	Wire Rod Mill	Coupled	1919	Black Steel & Wire Co.	Kansas City, Mo.	AC
741	800–400	450–225	2200	60	Copper Mill	Direct	1925	Anaconda Copper Mining Co.	Montana	GE
742	800	505	2200	60	9″ Hot Strip Mill	Direct	1926	West Leechburg Steel Co.	West Leechburg, Pa.	W
743	800	514	2200	60	Bar Mill	Geared	1919	Judson Mfg. Co.	Oakland, Calif.	AC
744	800	535–750	600	d.c.	10″ Wire Rod Mill	Geared	1926	American Steel & Wire Co.	Worcester, Mass.	W
745	800	535–750	600	d.c.	10″ Wire Rod Mill	Geared	1926	American Steel & Wire Co.	Worcester, Mass.	W
746	800	585–292	6600	60	16″ Hoop and Band Mill	Geared	1915	Weirton Steel Co.	Weirton, W. Va.	W
747	800	600	2200	60	Hot & Cold Sheet Mill	Geared	1924	American Nickel Co.	Clearfield, Pa.	GE
748	800	705	2200	60	12″ Merchant Mill	Geared	1919	McConway-Torley Co.	Pittsburgh, Pa.	W
749	800–363	706–320	600	d.c.	10″ Rod Mill	Geared	1922	Wheeling Steel Corp.	Portsmouth, Ohio	GE
750	800–363	706–320	600	d.c.	10″ Rod Mill	Geared	1922	Wheeling Steel Corp.	Portsmouth, Ohio	GE
751	800–363	706–320	600	d.c.	10″ Rod Mill	Geared	1922	Wheeling Steel Corp.	Portsmouth, Ohio	GE
752	800	720	4600	60	Rolling Mill	Geared	1925	Mich. Copper & Brass Co.	Detroit, Mich.	AC
753	800	720	4600	60	Rolling Mill	Geared	1925	Mich. Copper & Brass Co.	Detroit, Mich.	AC
754	800	720	4600	60	Rolling Mill	Geared	1925	Mich. Copper & Brass Co.	Detroit, Mich.	AC
755	800	720	4600	60	Rolling Mill	Geared	1925	Mich. Copper & Brass Co.	Detroit, Mich.	AC
756	800	720	4600	60	Rolling Mill	Geared	1925	Mich. Copper & Brass Co.	Detroit, Mich.	AC
757	800	730–365	2200	50	22″ Bar Mill	Geared	1916	Columbia Steel Co.	Los Angeles, Cal.	W
758	800	730–365	2200	50	12″ Merchant Mill	Geared	1916	Columbia Steel Co.	Los Angeles, Cal.	W
759	800	730–485	2200	50	12″ Merchant Mill	Geared	1919	Southern Calif. Iron & Steel Co.	Los Angeles, Cal.	W
760	800	870	2200	60	Copper Rod Mill	Geared	1923	American Brass Company	Kenosha, Wis.	W
761	800	870	2200	60	Copper Rod Mill	Geared	1923	American Brass Company	Kenosha, Wis.	W
762	800	875–700	2200	60	16″ Merchant Mill	Geared	1920	Kansas City Bolt & Nut Co.	Kansas City, Mo.	W
763	800	880–490	2200	60	Bar Mill	Geared	1920	Knoxville Iron Co.	Knoxville, Tenn.	W
764	800	892–623	2200	60	20″ Merchant (Finishing)	Geared	1919	Hoosier Rolling Mills Co.	Terre Haute, Ind.	W
765	800	900	440	60	Copper Rod Mill	Geared	1920	Western Electric Co.	Hawthorne, Ill.	GE
766	800–800	900–720	2200	60	9″ Merchant Mill	Geared	1923	Knoxville Iron Co.	Knoxville, Tenn.	GE
767	800–800	900–720	2200	60	9″ Merchant Mill	Geared	1923	Knoxville Iron Co.	Knoxville, Tenn.	GE
768	840–700–560	360–300–240	6600	25	9″ Merchant Mill	Direct	1925	Bethlehem Steel Co.	Bethlehem, Pa.	GE
769	850–570	214–143	6600	25	Merchant Mill	Direct	1920	Illinois Steel Co.	Gary, Ind.	GE
770	850–850	214–187	6600	25	10″ Merchant Mill	Rope	1916	Illinois Steel Co.	Gary, Ind.	GE
771	850–850	214–187	6600	25	10″ Merchant Mill	Rope	1916	Illinois Steel Co.	Gary, Ind.	GE
772	850	505	2200	60	24″ Bar (Roughing) Mill	Geared	1919	Central Steel Co.	Massillon, Ohio	W
773	850	710	2200	60	20″ Blooming Mill	Geared	1923	Washburn Wire Co.	Phillipsdale, R. I.	W
774	900	94	2200	25	Jobbing Sheet Mill	Rope	1910	American Sheet & Tin Plate Co.	Gary, Ind.	GE
775	900	94	2200	25	Jobbing Sheet Mill	Rope	1910	American Sheet & Tin Plate Co.	Gary, Ind.	GE
776	900	163	2200	60	Wire Rod Mill	Coupled	1917	Kokomo Steel & Wire Co.	Kokomo, Ind.	AC
777	900	163	2200	60	Wire Rod Mill	Rope	1919	Black Steel & Wire Co.	Kansas City, Mo.	AC
778	900–720	200–160	220	d.c.	Wheel Mill	Geared	1906	Bethlehem Steel Co.	Johnstown, Pa.	GE
779	900–900	214–150	2200	25	12″ Merchant Mill	Direct	1910	Algoma Steel Co.	Sault Ste. Marie,Can.	GE
780	900–710–620	325–257–182	2300	60	10″ Hoop Mill	Geared	1918	Acme Steel Goods Co.	Riverdale, Ill.	GE
781	900	425–640	250	d.c.	12-10″ Mill	Coupled	1925	Bethlehem Steel Co.	Johnstown, Pa.	AC
782	900	900	440	60	Copper Rod Mill	Geared	1920	Western Electric Co.	Hawthorne, Ill.	GE
783	975–375	650–250	600	d.c.	Rod (Roughing) Mill	Geared	1922	Atlantic Steel Co.	Atlanta, Ga.	W
784	975–510	865–450	600	d.c.	Rod (Finishing) Mill	Direct & Belt	1922	Atlantic Steel Co.	Atlanta, Ga.	W
785										
786	1000	50–100	600	d.c.	24″ Billet (Roughing)	Direct	1916	American Steel & Wire Co	Cleveland, Ohio	W
787	1000	50–175	600	d.c.	24″ Mill	Direct	1916	Central Steel Co.	Massillon, Ohio	W
788	1000	83	2200	25	Sheet Mill	Rope	1910	Follansbee Bros.	Follansbee, W. Va.	GE
789	1000	125	230	d.c.	Sheet Bar Mill	Geared	1920	Allegheny Steel Co.	Brackenridge, Pa.	GE
790	1000	133	2200	25	Structural (Finishing)	Direct	1910	Illinois Steel Co.	South Chicago, Ill.	W
791	1000	137	6600	25	Wheel Mill	Geared	1916	Illinois Steel Co.	Gary, Ind.	AC
792	1000	184	2200	25	16″ Merchant Mill	Direct	1908	Bethlehem Steel Co.	Johnstown, Pa.	W
793	1000	200–600	600	d.c.	10″ Merchant Mill	Geared	1925	McKinney Steel Co.	Cleveland, Ohio	W
794	1000	200–480	250	d.c.	12-9″ Mill	Geared	1925	Bethlehem Steel Co.	Johnstown, Pa.	AC
795	1000	200–480	250	d.c.	12-9″ Mill	Geared	1925	Bethlehem Steel Co.	Johnstown, Pa.	AC
796	1000–2000	200–400–600	250	d.c.	12-10″ Gautier Mill	Geared	1925	Bethlehem Steel Co.	Johnstown, Pa.	AC
797	1000	209	6600	25	14″ Cont. Skelp Mill	Coupled	1924	Gary Tube Co.	Gary, Ind.	AC
798	1000	210–510	230	d.c.	Bar Mill	Geared	1925	Donner Steel Co.	Buffalo, N. Y.	W
799	1000	214–150	6400	25	24″ Flat (Finishing) Mill	Direct	1916	American Steel & Wire Co.	Cleveland, Ohio	W
800	1000	225–168	4000	60	Rail Rerolling Mill	Direct	1926	Inland Steel Co.	Indiana Harbor, Ind.	GE
801	1000	225–168	4000	60	Rail Rerolling Mill	Direct	1926	Inland Steel Co.	Indiana Harbor, Ind.	GE
802	1000	235	2200	60	Cold Rolled Tin Mill	Coupled	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	AC
803	1000	235	2200	60	Cold Rolled Tin Mill	Coupled	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	AC
804	1000	240	440	60	Sheet Mill	Geared	1918	Robertson Iron & Steel Co.	Springfield, Ohio	AC
805	1000	240	220	60	Tube Mill	Geared	1919	Globe Seamless Tube Co.	Milwaukee, Wis.	AC
806	1000	240		60	Tube Mill	Rope & Direct	1917	Pittsburgh Seamless Tube Co.	Beaver Falls, Pa.	CW
807	1000	245	2200	25	30″ Sheet Jobbing Mill	Rope	1910	American Rolling Mills Co.	Middletown, Ohio	W
808	1000	250	6600	25	Tin Mill	Geared	1919	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
809	1000	250	6600	25	Tin Mill	Geared	1919	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
810	1000	250	6600	25	Sheet Mill	Geared	1919	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
811	1000	250	6600	25	Sheet Mill	Geared	1919	Bethlehem Steel Co.	Sparrows Point, Md.	GE
812	1000	250	2200	60	18″ Merchant Mill	Geared	1918	Canton Sheet Steel Co.	Canton, Ohio	W
813	1000	250	2200	60	Sheet Mill	Geared	1920	American Rolling Mills Co.	Zanesville, Ohio	W
814	1000	250	2200	25	Sheet Mill	Geared	1920	Otis Steel Co.	Cleveland, Ohio	AC
815	1000	250	2200	25	Sheet Mill	Geared	1920	Otis Steel Co.	Cleveland, Ohio	AC
816	1000–400	257–128	550	60	9″ Bar Mill No. 1	Geared	1926	Ludlum Steel Co.	Watervliet, N. Y.	GE
817	1000	277	2200	60	Strip Mill	Geared	1919	American Tube & Stamping Co.	Bridgeport, Conn.	GE
818	1000	290–500	600	d.c.	9″ Merchant Mill	Geared	1926	Illinois Steel Co.	Gary, Indiana	GE
819	1000	293	6600	25	14″ Cont. Skelp Mill	Geared	1924	Gary Tube Co.	Gary, Ind.	AC
820	1000	295	2200	60	12″ Cont. & 10″ Merch.	Direct	1920	Kansas City Bolt & Nut Co.	Kansas City, Mo.	W
821	1000	300	2200	25	10″ Merchant Mill	Geared	1916	Halcomb Steel Co.	Syracuse, N. Y.	GE
822	1000	300–150	2200	60	12″ Merchant Mill	Direct	1918	Central Steel Co.	Massillon, Ohio	W
823	1000	300	2200	60	Sheet Mill	Geared	1919	Superior Sheet Steel Co.	Canton, Ohio	GE
824	1000	300	2200	60	Sheet Mill	Geared	1919	Superior Sheet Steel Co.	Canton, Ohio	GE
825	1000	300	2200	60	Sheet Mill	Geared	1920	Milwaukee Rolling Mills Co.	Milwaukee, Wis.	GE
826	1000	300	2200	60	Sheet Mill	Geared	1920	Milwaukee Rolling Mills Co.	Milwaukee, Wis.	GE
827	1000	300	2200	25	Aluminum Rod Mill	Geared	1922	U. S. Aluminum Co.	Massena, N. Y.	GE
828	1000	300–400	230	d.c.	Lap Welding Mill	Coupled	1923	Gary Tube Co.	Gary, Ind.	AC
829	1000	300	2200	60	Sheet Mill	Geared	1925	Sharon Steel Hoop Co.	Sharon, Pa.	CW

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
827	1000	300	2200	60	Sheet Mill	Geared	1925	Sharon Steel Hoop Co.	Sharon, Pa.	CW
828	1000	300	2200	60	Sheet Mill	Geared	1925	Sharon Steel Hoop Co.	Sharon, Pa.	CW
829	1000	350–700	600	d.c.	12″ Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
830	1000	350–700	600	d.c.	12″ Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
831	1000	350–700	600	d.c.	12″ Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
832	1000	350–700	600	d.c.	12″ Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
833	1000	350–700	600	d.c.	12″ Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
834	1000	360	2200	60			1921	Tennessee Coal, Iron & R. R. Co.	Birmingham, Ala.	AC
835	1000	365	2200	50	Merchant Mill	Geared	1923	Columbia Steel Co.	Torrence, Cal.	W
836	1000	375	2200	25	Bar Mill	Geared	1913	Bethlehem Steel Co.	Johnstown, Pa.	AC
837	1200	240		60	Hot Sheet Mill	Coupled	1916	Standard Tin Plate Co.	Canonsburg, Pa.	
838	1000	375	2200	25	Wheel Mill	Geared	1913	Bethlehem Steel Co.	Johnstown, Pa.	AC
839	1000	375	6600	25	Piercing Mill	Geared	1925	National Tube Co.	Lorain, Ohio	AC
840	1000	375	4400	25	Merchant Mill	Geared	1919	Buffalo Bolt Co.	N. Tonawanda, N. Y.	GE
841	1000	435	2200	60	Hot Strip Mill	Geared	1924	American Tube & Stamping Co.	Bridgeport, Conn.	W
842	1000	435	2200	60	Hot Strip Mill	Geared	1924	American Tube & Stamping Co.	Bridgeport, Conn.	W
843	1000	450	2200	60	Piercing Mill	Geared	1918	Winchester Rep. Arms Co.	New Haven, Conn.	AC
844	1000	450	2200	60	Bar Mill	Rope	1919	Pacific Coast Steel Co.	Seattle, Wash.	AC
845	1000	450	2200	60	20″ Merchant Mill	Geared	1921	International Nickel Co.	Huntington, W. Va.	AC
846	1000	518–800	250	d.c.	20″ Merchant Mill	Geared	1919	National Farming Machinery, Ltd.	Montmagny, P. Q.	W
847	1000	590–495	6600	60	24″ Structural Mill	Geared	1917	Tennessee Coal, Iron & R. R. Co.	Fairfield, Ala.	W
848	1000	590–450	4000	60	14″ Merchant Mill	Geared	1920	Calumet Steel Co.	Chicago, Ill.	W
849	1000	590–450	4000	60	14″ Merchant Mill	Geared	1920	Calumet Steel Co.	Chicago, Ill.	W
850	1000	600	2200	60	16″ Skelp Mill	Geared	1923	Elyria Iron & Steel Co.	Elyria, Ohio	GE
851	1000	600	2300	60	Copper Mill	Geared	1925	American Copper Products Co.	Elizabeth, N. J.	GE
852	1000	600	2200	60	Hot and Cold Sheet Mills	Geared	1925	American Nickel Corp.	Clearfield, Pa.	GE
853	1000	705	2200	60	16″ Strip Mill	Geared	1920	Central Steel Co.	Massillon, Ohio	W
854	1000	720	4000	60	18″ 2-Stand Rerolling Rail Mill	Geared	1923	Buckeye Rolling Mill Co.	Newark, Ohio	GE
855	1000	710	2200	60	20″ Special Bar Mill	Geared	1925	Rail Joint Company	Troy, N. Y.	W
856	1000	710	2200	60	20″ Special Bar Mill	Geared	1925	Rail Joint Company	Troy, N. Y.	W
857	1000	720	6600	60	Rod Mills Nos. 8 and 9	Geared	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
858	1000	720	6600	60	Rod Mill No. 7	Geared	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
859	1000	725	2200	25	12″ Merchant Mill	Geared	1922	Burlington Steel Co., Ltd.	Hamilton, Ont.	W
860	1100–1500	91	2200	25	84″ Plate (Fin.) Mill	Direct	1909	American Sheet & Tin Plate Co.	Gary, Ind.	W
861	1100	214–320	600	d.c.	12″ Skelp Mill	Direct	1926	Bethlehem Steel Co.	Sparrows Pt., Md.	W
862	1100	240–382	600	d.c.	12″ Skelp Mill	Direct	1926	Bethlehem Steel Co.	Sparrows Pt., Md.	W
863	1100	294–205	2200	60	20″ Merchant Mill	Rope	1912	United Alloy Steel Corporation	Canton, Ohio	W
864	1125–900–675	312–250–187	6600	25	12″ Strip Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	GE
865	1150	250	6600	25	Jobbing Sheet Mill	Geared	1913	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
866	1180–955–705	560–450–336	2200	60	Rod Mill	Belt	1916	Keystone Steel & Wire Co.	Peoria, Ill.	GE
867	1190–875–525	350–250–150	2200	25	Merchant Mill	Direct-Rope	1925	Bethlehem Steel Co.	Lebanon, Pa.	GE
868	1200	25–50	330	d.c.	Reversing Plate Mill	Direct	1926	Lukens Steel Co.	Coatesville, Pa.	GE
869	1200–1200	150–250	230	d.c.	12″ Merchant Mill	Direct	1920	Timken Roller Bearing Co.	Canton, Ohio	GE
870	1200	160–320	250	d.c.	12″ Merchant Mill	Direct	1926	Pittsburgh Crucible Steel Co.	Midland, Pa.	GE
871	1200	200	2200	60	Piercing Mill	Rope	1919	Ohio Seamless Tube Co.	Shelby, Ohio	GE
872	1200	200–400	230	d.c.	14″ Band Mill	Direct	1926	Sharon Steel Hoop Co.	Sharon, Pa.	W
873	1200	200–400	230	d.c.	14″ Band Mill	Direct	1926	Sharon Steel Hoop Co.	Sharon, Pa.	W
874	1200	214	2200	25	84″ Plate Mill	Geared	1913	Otis Steel Co.	Cleveland, Ohio	GE
875	1200	214	2200	25	Jobbing Sheet Mill	Geared	1913	Otis Steel Co.	Cleveland, Ohio	GE
876	1200	240	440	25	26″ Sheet Mill	Rope	1907	Seneca Iron & Steel Co.	Buffalo, N. Y.	W
877	1200	240	2200	60	Sheet Mill	Geared	1915	Empire Rolling Mills	Cleveland, Ohio	GE
878	1200	240	2200	60	Sheet Mill	Geared	1916	Mahoning Valley Steel Co.	Niles, Ohio	GE
879	1200	240	2200	60	Sheet Mill	Geared	1916	United Alloy Steel Corp.	Canton, Ohio	GE
880	1200	240	2200	60	Sheet Mill	Geared	1917	United Alloy Steel Corp.	Canton, Ohio	GE
881	1200	240	2200	60	Sheet Mill	Geared	1920	Republic Iron & Steel Co.	Youngstown, Ohio	GE
882	1200	240	2200	60	Sheet Mill	Geared	1920	Republic Iron & Steel Co.	Youngstown, Ohio	GE
883	1200	240	2200	60	Hot Sheet Mill	Coupled	1915	Standard Tin Plate Co.	Canonsburg, Pa.	CW
884	1200	240	2200	60	Hot Sheet Mill	Coupled	1915	Standard Tin Plate Co.	Canonsburg, Pa.	CW
885	1200	240	2200	60	Hot Sheet Mill	Coupled	1915	Standard Tin Plate Co.	Canonsburg, Pa.	CW
886	1200	240	2200	60	Hot Sheet Mill	Coupled	1915	Standard Tin Plate Co.	Canonsburg, Pa.	CW
887	1200	240	2200	60	Hot Sheet Mill	Coupled	1915	Standard Tin Plate Co.	Canonsburg, Pa.	CW
888	1200	244	2200	25	Sheet Mill	Geared	1917	Bethlehem Steel Co.	Sparrows Pt., Md.	W
889	1200	244	2200	25	Sheet Mill	Geared	1917	Bethlehem Steel Co.	Sparrows Pt., Md.	W
890	1200	244	2200	25	Sheet Mill	Geared	1920	American Rolling Mills Co.	Middletown, Ohio	W
891	1200	244	2200	25	Sheet Mill	Geared	1920	American Rolling Mills Co.	Middletown, Ohio	W
892	1200	244	2200	25	Sheet Mill	Geared	1926	American Rolling Mills	Middletown, Ohio	W
893	1200	244	2200	25	Sheet Mill	Geared	1926	American Rolling Mills	Middletown, Ohio	W
894	1200	277	2200	60	Sheet Mill	Geared	1925	Wheeling Steel Corp.	Wheeling W. Va.	GE
895	1200	257	4600	60	Tube Mill	Rope & Coupled	1918	Detroit Seamless Tube Co.	Detroit, Mich.	AC
896	1200	292	2200	25	12″ Continuous and 10″ Merchant Mill	Direct & Rope	1912	Laclede Steel Co.	Alton, Ill.	W
897	1200	294	2200	60	Tube Rolling Mill	Geared	1915	National Tube Co.	Ellwood City, Pa.	W
898	1200	294	2200	60	Rolling Mill	Geared	1917	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind	W
899	1200	295	6600	60	Sheet Mill	Coupled	1922	Weirton Steel Co.	Weirton, W. Va.	AC
900	1200	295	6600	60	Sheet Mill	Coupled	1922	Weirton Steel Co.	Weirton, W. Va.	AC
901	1200–1150–800	300–214–150	2200	25	Merchant Mill, No.10	Geared	1916	Bethlehem Steel Co.	Lackawanna, N.Y.	GE
902	1200–1000–800	300–250–200	4400	25	14″ Merchant Mill	Direct	1919	Buffalo Bolt Co.	N. Tonawanda, N. Y.	GE
903	1200	300	4100	50	Sheet Mill	Geared	1920	Chapman Price Steel Co.	Indianapolis, Ind.	GE
904	1200	300	2200	60	Sheet Mill	Geared	1920	Central Steel Co.	Massillon, Ohio	GE
905	1200	300	2200	60	Sheet Mill	Geared	1920	Central Steel Co.	Massillon, Ohio	GE
906	1200	300	2200	60	Sheet Mill	Geared	1924	Thomas Sheet Steel Co.	Niles, Ohio	GE
907	1200	300	2200	60	Sheet Mill	Geared	1924	Thomas Sheet Steel Co.	Niles, Ohio	GE
908	1200	300–500	600	d.c.	10″ Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	W
909	1200	352	2200	60	Sheet Mill	Rope	1917	Mansfield Sheet & Tin Plate Co.	Mansfield, Ohio	W
910	1200	360	2200	60	Morgan Wire Rod Mill	Geared	1918	Interstate Iron & Steel Co.	Chicago, Ill.	AC
911	1200	360	2200	60	30″ Sheet Mill	Geared	1921	International Nickel Co.	Huntington, W. Va.	AC
912	1200	360	2200	60	24″ Bar Mill	Geared	1921	International Nickel Co.	Huntington, W. Va.	AC
913	1200	367	2200	25	Cold Rolling Mill	Geared	1917	Bethlehem Steel Co.	Sparrows Pt., Md.	W
914	1200	368	2200	50	20″ Merchant Mill	Geared	1919	Southern Calif. Iron & Steel Co.	Los Angeles, Cal.	W
915	1200	400	650	d.c.	Aluminum Plate Mill	Geared	1915	Aluminum Company of America	Niagara Falls, N. Y.	GE
916	1200–1000–800	450–375–300	6600	25	8″ Hoop Mill, No. 8	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
917	1200–1000–800	450–375–300	6600	25	8″ Hoop Mill, No. 9	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
918	1200–1000–800	450–375–300	6600	25	8″ Bar Mill, No. 16	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
919	1200–1200–1200	450–360–270	2300	60	9″ Hot Strip Mill	Geared	1916	Trumbull Steel Co.	Warren, Ohio	GE
920	1200–1200–1200	450–360–270	2300	60	9″ Hot Strip Mill	Geared	1916	Trumbull Steel Co.	Warren, Ohio	GE
921	1200–1200–1200	450–360–270	2300	60	9″ Hot Strip Mill	Direct	1916	Trumbull Steel Co.	Warren, Ohio	GE
922	1200–1000–800	450–375–300	6600	25	18″ Band Mill, No. 13	Geared	1919	Carnegie Steel Co.	Youngstown, Ohio	GE
923	1200	450	6600	60	Rail Mill Finishing Stand	Geared	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
924	1200	485	6400	25	12″ Merchant Mill	Geared	1916	American Steel & Wire Co.	Cleveland, Ohio	W
925	1200	500	2200	25	28″ Rail Mill	Geared	1914	Bethlehem Steel Co.	Steelton, Pa.	GE
926	1200	500	2200	25	72″ Jobbing Plate Mill	Geared	1926	Alan Wood Iron & Steel Co.	Coshocton, Pa.	GE
927	1200	505–303	6600	60	16″ Band Mill	Geared	1919	Weirton Steel Co.	Weirton, W. Va.	W
928	1200	505	2200	60	29″ Bar (Roughing) Mill	Geared	1922	Youngstown Steel Co.	Youngstown, Ohio	W
929	1200	514	2200	60	Bar Mill	Geared	1917	Elyria Iron & Steel Co.	Elyria, Ohio	AC
930	1200	514	2200	60	Wire Rod Mill	Geared	1917	Kokomo Steel & Wire Co.	Kokomo, Ind.	AC
931	1200	590	2200	60	22″ Strip Mill	Geared	1919	Harrisburg Pipe & Pipe Bending Co.	Harrisburg, Pa.	W
932	1200	590	2200	60	24″ Blooming Mill	Geared	1919	McConway-Torley Co.	Pittsburgh, Pa.	W
933	1200	590–450	2200	60	Duo and Bull Head Mill	Geared	1916	Central Steel Co.	Massillon, Ohio	W

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
934	1200	500-407	2200	60	20" Merchant (Roughing)	Geared	1918	Hoosier Rolling Mill Co.	Terre Haute, Ind.	W
935	1250	175-400	230	d.c.	Rod Mill	Direct	1915	United Alloy Steel Corporation	Canton, Ohio	W
936	1250-1250	175-350	600	d.c.	14" Hot Strip Mill	Geared	1920	Trumbull Steel Co.	Warren, Ohio	GE
937	1250-1250	175-350	600	d.c.	14" Hot Strip Mill	Geared	1920	Trumbull Steel Co.	Warren, Ohio	GE
938	1250	250	6600	25	Hot Tin Mill	Geared	1924	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
939	1250	250	6600	25	Hot Tin Mill	Geared	1924	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
940	1250	250	6600	25	Cold Tin Mill	Geared	1924	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
941	1250	250	6600	25	Sheet Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	GE
942	1250	250	6600	25	Hot Tin Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	GE
943	1250	250	6600	25	Hot Tin Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	GE
944	1250	250	6600	25	Cold Tin Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	GE
945	1250	294	6600	25	14" Cont. Skelp Mill	Coupled	1924	Gary Tube Co.	Gary, Ind.	AC
946	1250	300	6600	25	Steel Mill	Geared	1925	American Sheet & Tin Plate Co.	Wellsville, Ohio	AC
947	1250	375	2080	25	18" Billet Mill	Geared	1918	Wickwire Spencer Steel Co.	Buffalo, N. Y.	GE
948	1250	375	2080	25	18" Billet Mill	Geared	1918	Wickwire Spencer Steel Co.	Buffalo, N. Y.	GE
949	1250	375	2200	25	Merchants Bar Mill	Geared	1919	Valley Steel Co.	Milwaukee, Wis.	AC
950	1250-1000-650	650-500-325	2200	25	Rod Mill	Belt	1916	Wickwire Spencer Steel Co.	Buffalo, N. Y.	GE
951	1250	712-430	6600	60	3 Stand 12" Mill	Coupled	1921	Tennessee Coal, Iron & R. R. Co.	Birmingham, Ala.	AC
952	1300-900	214-140	2200	25	12" Merchant Mill	Direct	1912	Gulf States Steel Co.	Birmingham, Ala.	GE
953	1300-1300	214-187	6600	25	10" Merchant Mill	Geared	1916	Illinois Steel Co.	Gary, Ind.	GE
954	1300	360	2200	60	Wire Rod Mill	Coupled	1917	Kokomo Steel & Wire Co.	Kokomo, Ind.	AC
955	1300	500	6600	25	Rod (Finishing) Mill	Rope	1912	American Steel & Wire Co.	Birmingham, Ala.	W
956	1350-1000	214-161	4400	25	Rail Rerolling Mill	Direct	1926	Buffalo Steel Co.	Tonawanda, N. Y.	GE
957	1350-1000	214-161	4400	25	Rail Rerolling Mill	Direct	1926	Buffalo Steel Co.	Tonawanda, N. Y.	GE
958	1350	600	2300	60	Copper Mill	Geared	1918	American Brass Company	Waterbury, Conn.	GE
959	1400	240	2200	60	Sheet Mill	Geared	1912	Apollo Steel Co.	Apollo, Pa.	GE
960	1400	450-550	500	d.c.	12" Spring Mill	Coupled	1926	Ford Motor Co., Fordson Plant	Detroit, Mich.	AC
961	1400	505	2200	60	14" Billet Mill	Geared	1917	Wickwire Spencer Steel Corp.	Palmer, Mass.	W
962	1400-945	600-405	2200	60	21" Merchant Mill	Geared	1915	Bourne-Fuller Co.	Cleveland, Ohio	GE
963	1500	50-80	600	l.c.	Cont. Merchant Mill	Direct	1925	Inland Steel Co.	Indiana Harbor, Ind.	GE
964	1500	62-½	6600	25	Tube Rolling Mill	Coupled	1926	Gary Tube Co.	Gary, Indiana	AC
965	1500	80	2200	60	Morgan Continuous Mill	Coupled	1920	Interstate Iron & Steel Co.	Chicago, Ill.	AC
966	1500	94	2200	25	18" Merchant Mill	Direct	1910	Algoma Steel Co.	Sault Ste. Marie,Can.	GE
967	1500	100-125	220	d.c.	Light Rail Mill	Direct	1905	Carnegie Steel Co.	Bessemer, Pa.	W
968	1500	100-125	220	d.c.	Light Rail Mill	Direct	1905	Carnegie Steel Co.	Bessemer, Pa.	W
969	1500	100-150	600	l.c.	14" Merchant Mill	Direct	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
970	1500	125-250	230	d.c.	14" Band Mill	Direct	1914	Sharon Steel Hoop Co.	Sharon, Pa.	W
971	1500	125-250	240	d.c.	Strip Mill	Geared	1922	West Leechburg Steel Co.	Leechburg, Pa.	W
972	1500	125-250	240	d.c.	Strip Mill	Geared	1922	West Leechburg Steel Co.	Leechburg, Pa.	W
973	1500	133-81.5	6600	25	18" Structural Mill	Direct	1915	Bethlehem Steel Co.	So. Bethlehem, Pa.	W
974	1500	150	6600	25	Wire Rod Mill	Coupled	1914	Illinois Steel Co.	Joliet, Ill.	AC
975	1500	150-300	250	d.c.	18-14" Structural Mill	Direct	1924	Bethlehem Steel Co.	Johnstown, Pa.	AC
976	1500	150-300	250	d.c.	18-14" Structural Mill	Direct	1924	Bethlehem Steel Co.	Johnstown, Pa.	AC
977	1500	182-162	6600	25	10" Bar Mill	Direct & Rope	1913	Carnegie Steel Co.	Duquesne, Pa.	W
978	1500	187	2200	25	Sheet Mill	Chain	1914	National Enamel & Stamping Co.	Granite City, Ill.	AC
979	1500	198-400	600	d.c.	10" Strip Mill	Rope & Direct	1926	LacLede Steel Co.	Alton, Ill.	W
980	1500	200	6600	60	Strip Sheet Mill	Geared	1926	Weirton Steel Co.	Weirton, W. Va.	GE
981	1500	200-400	600	d.c.	20"-16" Hot Strip Mill	Geared	1925	Acme Steel Co.	Chicago, Ill.	W
982	1500	200-300	600	d.c.	10" Merchant Mill	Direct	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
983	1500	210	2200	25	30" Sheet Mill	Rope	1910	American Rolling Mill Co.	Middletown, Ohio	W
984	1500	218-145	6600	25	18" Merchant Mill	Geared	1916	Carnegie Steel Co.	Duquesne, Pa.	W
985	1500	234	2200	60	Sheet Mill	Geared	1915	Canton Sheet & Steel Co.	Canton, Ohio	W
986	1500	234	2200	60	Sheet Mill	Geared	1916	Mansfield Sheet & Tin Plate Co.	Mansfield, Ohio	W
987	1500	234	220	60	26" Sheet Bar Mill	Geared	1916	Canton Sheet Steel Co.	Canton, Ohio	W
988	1500	234	2200	60	Sheet Mill	Geared	1917	Liberty Steel Co.	Warren, Ohio	W
989	1500	234	2200	60	Sheet Mill	Geared	1919	Mansfield Sheet & Tin Plate Co.	Mansfield, Ohio	W
990	1500	234	2200	60	10" Rod Mill	Geared	1921	Columbia Steel Co.	Pittsburgh, Cal.	W
991	1500	240	2200	60	Sheet Mill	Geared	1919	Follensbee Bros.	Toronto, Ohio	AC
992	1500	240	2200	60	Sheet Mill	Geared	1919	Follensbee Bros.	Toronto, Ohio	AC
993	1500	240	2200	60	Sheet Mill	Geared	1920	Central Alloy Steel Co.	Canton, Ohio	AC
994	1500	240	2200	60	Sheet Mill	Geared	1922	Central Alloy Steel Co.	Canton, Ohio	GE
995	1500	250	2200	25	Sheet Mill	Geared	1919	Eastern Rolling Mills Co.	Baltimore, Md.	GE
996	1500	250	2200	25	Sheet Mill	Geared	1919	Eastern Rolling Mills Co.	Baltimore, Md.	GE
997	1500	257	2200	25	10" Hot Strip Mill	Direct	1919	Superior Steel Co.	Carnegie, Pa.	GE
998	1500	270	2200	60	Sheet Mill	Geared	1914	Youngstown Sheet & Tube Co.	Warren, Ohio	W
999	1500	270	2200	60	24" Sheet Bar & Billet Mill	Geared	1914	Central Steel Co.	Massillon, Ohio	W
1000	1500	270	2200	60	Lamberton Rod Mill	Geared	1915	United Alloy Steel Corporation	Canton, Ohio	W
1001	1500	270	2200	60	22" Bar and Billet Mill	Geared	1918	Central Steel Co.	Massillon, Ohio	W
1002	1500	277	2200	60	22" Skelp Mill	Direct	1924	Bethlehem Steel Corp.	Coatesville, Pa.	GE
1003	1500-1500	280-420	600	d.c.	20" Hot Strip Mill	Direct	1922	Otis Steel Co.	Cleveland, Ohio	GE
1004	1500-1500	280-420	600	d.c.	20" Hot Strip Mill	Direct	1922	Otis Steel Co.	Cleveland, Ohio	GE
1005	1500-1500	280-420	600	d.c.	20" Hot Strip Mill	Direct	1922	Otis Steel Co.	Cleveland, Ohio	GE
1006	1500	295	2200	60	Sheet Mill	Geared	1924	Kansas City Bolt & Nut Co.	Kansas City, Mo.	AC
1007	1500	300	4600	60	Sheet Mill	Geared	1922	Michigan Steel Corp.	Detroit, Mich.	GE
1008	1500	300	4600	60	Sheet Mill	Geared	1924	Michigan Steel Corp.	Detroit, Mich.	GE
1009	1500-1250-875	300-250-175	2200	50	Merchant Mill	Direct	1925	Southern Calif. Iron & Steel Co.	Los Angeles, Cal.	GE
1010	1500-1200-900	320-275-200	2200	60	10" Merchant Mill	Geared	1925	Pacific Coast Steel Co.	So. San Fran., Cal.	GE
1011	1500	322-193	2200	60	18" Sheet Bar Mill	Geared	1926	Columbia Steel Co.	Pittsburgh, Calif.	W
1012	1500	355	2200	60	35" Blooming Mill	Geared	1924	Timken Roller Bearing Co.	Canton, Ohio	AC
1013	1500	360-240	6600	25	12" Merchant Mill	Rope	1916	Carnegie Steel Co.	Duquesne, Pa.	W
1014	1500	360	6400	25	Billet Mill	Geared	1916	American Steel & Wire Co.	Cleveland, Ohio	W
1015	1500	360	2200	60	10" Hot Strip Mill	Direct	1919	Superior Steel Co.	Carnegie, Pa.	GE
1016	1500-1250-1000	360-300-240	2200	25	28" Rail Mill	Geared	1920	Bethlehem Steel Co.	Steelton, Pa.	GE
1017	1500	360	4000	60	Sheet Mill	Geared	1923	Pacific Sheet Steel Corp.	So.San Francisco,Cal.	GE
1018	1500	360	2200	60	Sheet Mill	Geared	1923	Columbia Steel Co.	Pittsburgh, Cal.	GE
1019	1500	368	2200	25	Sheet Bar (Finishing) Mill	Geared	1923	Inland Steel Co.	Chicago, Ill.	W
1020	1500-1125	375-281	2200	25	10" Merchant Mill	Geared	1916	Donner Steel Co.	Buffalo, N. Y.	GE
1021	1500	375	2200	25	26" 3 high Blooming Mill	Geared	1920	Atlas Crucible Steel Co.	Dunkirk, N. Y.	GE
1022	1500	440	2200	60	22" Bar Mill	Geared	1919	Kansas City Bolt & Nut Co.	Kansas City, Mo.	W
1023	1500	450	2200	30	3 High Skelp Mill	Geared	1915	Spang Chalfant Co.	Etna, Pa.	GE
1024	1500-1500-1200	450-360-270	2300	60	16" Strip Mill	Geared	1916	Trumbull Steel Co.	Warren, Ohio	GE
1025	1500	450	2200	60	Roughing Mill	Geared	1919	Pacific Coast Steel Co.	San Francisco, Calif.	AC
1026	1500	450	2200	60	Bar Mill	Rope	1919	Pacific Coast Steel Co.	Seattle, Wash.	AC
1027	1500	450	2200	60	9" Rod Mill	Direct	1926	Washburn Wire Co.	Philipsdale, R. I.	W
1028	1500	450	6600	60	Strip Sheet Mill	Geared	1926	Weirton Steel Co.	Weirton, W. Va.	GE
1029	1500	450	6600	60	Strip Sheet Mill	Geared	1926	Weirton Steel Co.	Weirton, W. Va.	GE
1030	1500	450-550	600	d.c.	Rod Mills Nos. 16, 18	Direct	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
1031	1500-1200-900	468-375-281	6600	25	12" Strip Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	GE
1032	1500	470-510	230	d.c.	Rod Mill	Direct	1923	John A. Roebling Sons	New York, N. Y.	W
1033	1500	491	6600	25	14" Cont. Skelp Mill	Geared	1924	Gary Tube Co.	Gary, Ind.	AC
1034	1500	505	6600	60	16" Hoop and Band Mill	Geared	1915	Weirton Steel Co.	Weirton, W. Va.	W
1035	1500	257-508	6600	60		Coupled	1924	Weirton Steel Co.	Weirton, W. Va.	AC
1036	1500	508	6600	60	Steel Mill	Geared	1924	Weirton Steel Co.	Weirton, W. Va.	AC
1037	1500	514	2200	60	Wire Rod Mill	Coupled	1917	Kokomo Steel & Wire Co.	Kokomo, Ind.	AC
1038	1500	514	6600	60	Hot Strip Mill	Geared	1917	Weirton Steel Co.	Weirton, W. Va.	AC
1039	1500-1500	514-277	6600	50	Hot Strip Mill	Geared	1917	Weirton Steel Co.	Weirton, W. Va.	AC
1040	1500	593	6600	60	6 Stand 11" Mill	Coupled	1921	Tennessee Coal, Iron & R. R. Co.	Birmingham, Ala.	AC
1041	1500	600	2200	50	Light Rail Mill	Geared	1919	West Virginia Rail Co.	Huntington, W. Va.	AC
1042	1500	705	2200	60	Strip Mill	Geared	1922	West Leechburg Steel Co.	Leechburg, Pa.	W

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1043	1500	705	2200	60	Srtip Mill	Geared	1922	West Leechburg Steel Co.	Leechburg, Pa.	W
1044	1500	705	2200	60	24" Bar (Finishing) Mill	Geared	1922	Youngstown Steel Co.	Youngstown, Ohio	W
1045	1500	705	2200	60	Skelp Mill Scarfing Stand	Geared	1923	Bethlehem Steel Corp.	Coatesville, Pa.	AC
1046	1500	705	2200	60	22" Bar Mill	Geared	1924	Atchison, Topeka & Sante Fe Ry.	San Francisco, Cal.	AC
1047	1500	705	2200	60	20"-16" Hot Strip Mill	Geared	1925	Acme Steel Goods Co.	Riverdale, Ill.	W
1048	1500	735	2200	25		Geared	1923	Scullin Steel Co.	St. Louis, Mo.	AC
1049	1500	890-540	6600	60	4 Stand 12" Mill	Coupled	1921	Tennessee Coal, Iron & R. R. Co.	Birmingham, Ala.	AC
1050	1600	94	2200	25	Sheet Mill	Rope	1910	American Sheet & Tin Plate Co.	Gary, Ind.	GE
1051	1660	94	2200	25	Sheet Mill	Rope	1910	American Sheet & Tin Plate Co.	Gary, Ind.	GE
1052	1600	94	2200	25	Sheet Mill	Rope	1913	American Sheet & Tin Plate Co.	Gary, Ind.	GE
1053	1600	94	2200	25	Sheet Mill	Rope	1913	American Sheet & Tin Plate Co.	Gary, Ind.	GE
1054	1600	94	2200	25	Tin Mill	Rope	1915	McKeesport Tin Plate Co.	McKeesport, Pa.	GE
1055	1600	94	2200	25	Tin Mill	Rope	1915	McKeesport Tin Plate Co.	McKeesport, Pa.	GE
1056	1600	94	2200	25	Tin Mill	Rope	1915	McKeesport Tin Plate Co.	McKeesport, Pa.	GE
1057	1600	94	2200	25	Tin Mill	Rope	1915	McKeesport Tin Plate Co.	McKeesport, Pa.	GE
1058	1600	150	6600	25		Direct	1912	Pittsburgh Crucible Steel Co.	Pittsburgh, Pa.	GE
1059	1600	210	2200	25	Sheet Mill	Geared	1912	Inland Steel Co.	Indiana Harbor, Ind.	W
1060	1600	210-420	525	d.c.	Rod Mill	Geared	1913	Steel Company of Canada	Hamilton, Ont.	W
1061	1600	210-420	525	d.c.	Rod Mill	Geared	1913	Steel Company of Canada	Hamilton, Ont.	W
1062	1600	214	2200	25	84" Plate Mill	Geared	1913	Otis Steel Co.	Cleveland, Ohio	GE
1063	1600	240	2200	60	Sheet Mill	Geared	1919	Falcon Steel Co.	Niles, Ohio	GE
1064	1600	244	2200	25	84" Plate Mill (Roughing)	Geared	1912	Alan Wood Iron & Steel Co.	Ivy Rock, Pa.	W
1065	1600	244	2200	25	84" Plate Mill (Finishing)	Geared	1912	Alan Wood Iron & Steel Co.	Ivy Rock, Pa.	W
1066	1600	250	440	25	Sheet Mill	Geared	1914	Seneca Iron & Steel Co.	Buffalo, N. Y.	GE
1067	1600	257	2200	60	14" Cont. Billet Mill	Geared	1912	Atlantic Steel Co.	Atlanta, Ga.	GE
1068	1600	270	2200	60	Sheet Mill	Geared	1916	Wheeling Steel Corporation	Wheeling, W. Va.	W
1069	1600	270	2200	60	Sheet Mill	Geared	1916	Wheeling Steel Corporation	Portsmouth, Ohio	W
1070	1600	280	2200	60	Continuous Billet Mill	Geared	1913	Steel Company of Canada	Hamilton, Ont.	W
1071	1600	500	6600	25	Rod (Finishing) Mill	Rope	1910	American Steel & Wire Co.	Birmingham, Ala.	W
1072	1600	490	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
1073	1600	440-490-540	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
1074	1600	440-490-540	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
1075	1600	600	2200	60	Piercing Mill	Geared	1921	Standard Seamless Tube Co.	Pittsburgh, Pa.	GE
1076	1600	600	2200	60	Tube Rolling Mill	Geared	1925	Standard Seamless Tube Co.	Economy, Pa.	GE
1077	1600	705	2200	60	9" Hot Strip Mill	Geared	1926	West Leechburg Steel Co.	West Leechburg, Pa.	W
1078	1650-1500-1350	413-375-337	6600	25	10" Bar Mill, No. 10	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
1079	1700-1700	90-140	600	d.c.	14" Continuous Mill	Direct	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
1080	1700-1700	90-205	600	d.c.	14" Continuous Mill	Direct	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
1081	1700	214	2200	25	Sheet Mill	Geared	1915	American Sheet & Tin Plate Co.	Gary, Ind.	GE
1082	1700	214	2200	25	Tin Mill	Geared	1915	American Sheet & Tin Plate Co.	Gary, Ind.	GE
1083	1700	214	2200	25	Tin Mill	Geared	1915	American Sheet & Tin Plate Co.	Gary, Ind.	GE
1084	1700	214	2200	25	Tin Mill	Geared	1918	American Sheet & Tin Plate Co.	Gary, Ind.	GE
1085	1700	214	2200	25	Tin Mill	Geared	1918	American Sheet & Tin Plate Co.	Gary, Ind.	GE
1086	1700	214	2200	25	Tin Mill	Geared	1918	American Sheet & Tin Plate Co.	Gary, Ind.	GE
1087	1700	214	2200	25	Tin Mill	Geared	1919	American Sheet & Tin Plate Co.	Gary, Ind.	GE
1088	1700	250	440	25	Hot Sheet Mill	Geared	1925	Seneca Iron & Steel Co.	Buffalo, N. Y.	GE
1089	1700	250-500	250	d.c.	12-10" Mill	Geared	1925	Bethlehem Steel Co.	Johnstown, Pa.	AC
1090	1750	70-120	600	d.c.	29" Billet Mill	Direct	1916	Youngsto wnSteel & Tube Co.	Indiana Harbor, Ind.	W
1091	1750	100-200	500	d.c.	12" Spring Mill	Coupled	1926	Ford Motor Co., Fordson Plant	Detroit, Mich.	AC
1092	1750	150-300	230	d.c.	18-14" Structural Mill	Direct	1924	Bethlehem Steel Corp.	Lackawanna, N. Y.	AC
1093	1800	40	600	d.c.	84" Sheared Plate Mill	Direct	1917	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
1094	1800	75	6600	25	30" Billet Mill	Direct	1914	Bethlehem Steel Co.	Bethlehem, Pa.	GE
1095	1800-1800	115-230	600	d.c.	20" Hot Strip Mill	Direct	1922	Otis Steel Co.	Cleveland, Ohio	GE
1096	1800-1800	115-230	600	d.c.	20" Hot Strip Mill	Direct	1922	Otis Steel Co.	Cleveland, Ohio	GE
1097	1800-1800	115-230	600	d.c.	20" Hot Strip Mill	Direct	1922	Otis Steel Co.	Cleveland, Ohio	GE
1098	1800	120-80	2200	25	Light Rail Mill	Direct	1905	Illinois Steel Co.	South Chicago, Ill.	W
1099	1800	120-80	2200	25	Light Rail Mill	Direct	1905	Illinois Steel Co.	South Chicago, Ill.	W
1100	1800	125-250	600	d.c.	20"-16" Hot Strip Mill	Direct	1925	Acme Steel Co.	Chicago, Ill.	W
1101	1800	125-250	600	d.c.	20"-16" Hot Strip Mill	Direct	1925	Acme Steel Co.	Chicago, Ill.	W
1102	1800	150-300	250	d.c.	18-14" Structural Mill	Direct	1924	Bethlehem Steel Co.	Lackawanna, N. Y.	AC
1103	1800	165-350	240	d.c.	Strip Mill	Direct	1922	West Leechburg Steel Co.	Leechburg, Pa.	W
1104	1800	165-350	240	d.c.	Strip Mill	Direct	1922	West Leechburg Steel Co.	Leechburg, Pa.	W
1105	1800	185-370	600	d.c.	20"-16" Hot Strip Mill	Geared	1925	Acme Steel Co.	Chicago, Ill.	W
1106	1800	185-370	600	d.c.	20"-16" Hot Strip Mill	Direct	1925	Acme Steel Co.	Chicago, Ill.	W
1107	1800	185-370	600	d.c.	20"-16" Hot Strip Mill	Direct	1925	Acme Steel Co.	Chicago, Ill.	W
1108	1800	200-400	600	d.c.	Cont. Merchant Mill	Direct	1925	Inland Steel Co.	Indiana Harbor, Ind.	GE
1109	1800	214	2200	25	6" Hot Strip Mill	Rope	1907	American Steel & Wire Co.	Cleveland, Ohio	GE
1110	1800	235	2200	60	Sheet Mill	Geared	1915	Trumbull Steel Co.	Warren, Ohio	W
1111	1800-1500-1200	240-200-160	2300	60	10" Hoop Mill	Belt	1918	Acme Steel Good Co.	Riverdale, Ill.	GE
1112	1800	240	2200	60	Sheet Mill	Geared	1920	Apollo Steel Co.	Apollo, Pa.	GE
1113	1800-1800	250-125	6600	25	22" Merchant Mill	Geared	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
1114	1800	250	2200	60	Tube Rolling Mill	Direct	1915	National Tube Co.	Ellwood City, Pa.	W
1115	1800	252	2200	60	Tube Rolling Mill	Direct	1925	National Tube Co.	Ellwood City, Pa.	W
1116	1800	253	2200	60	Eight Stand Tin Mill	Coupled	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	AC
1117	1800	270	6600	60	Sheet Mill	Geared	1916	Andrews Steel Co.	Newport, Ky.	W
1118	1800	270	6600	60	Sheet Mill	Geared	1916	Andrews Steel Co.	Newport, Ky.	W
1119	1800	275-550	600	d.c.	12" Skelp Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	W
1120	1800	275-550	600	d.c.	12" Skelp Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	W
1121	1800	295	2200	60	32" Hot Roll Mill	Geared	1926	American Sheet & Tin Plate Co.	Monnessen, Pa.	AC
1122	1800	350-640	500	d.c.	18" Rougher	Geared	1926	Pittsburgh Crucible Steel Co.	Midland, Pa.	AC
1123	1800	366	2200	25	22" Billet & Struct. Mill	Geared	1919	Scullin Steel Co.	St. Louis, Mo.	W
1124	1800-1800-1800	370-300-247	6600	60	Sheet Bar Mill	Geared	1920	American Rolling Mill Co.	Ashland, Ky.	GE
1125	1800-1500-1200	450-375-300	6600	25	10" Hoop Mill, No. 11	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
1126	1800	500	6600	25	20" Hot Strip Mill	Geared	1922	Otis Steel Co.	Cleveland, Ohio	GE
1127	1800	514	2200	60	Rod Mill	Geared	1923	Columbia Steel Co.	Pittsburgh, Cal.	GE
1128	1800	550-650	250	d.c.	22" Merchant Mill	Geared	1925	Crucible Steel Co.	Pittsburgh, Pa.	GE
1129	1850-1450-925	120-94-60	6600	25	16" Hand Bar Mill	Direct	1921	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
1130	1850	575-221	600	d.c.	Rod Mill	Direct & Belt	1922	Atlantic Steel Co.	Atlanta, Ga.	W
1131	2000	50-100	600	d.c.	30" Bar Mill	Direct	1919	Follansbee Brothers Co.	Toronto, Ohio	W
1132	2000	0-57-163	700	d.c.	52" Struct. Edging Mill	Direct	1926	Carnegie Steel Co.	Homestead, Pa.	W
1133	2000	0-57-163	700	d.c.	52" Struct. Edging Mill	Direct	1926	Carnegie Steel Co.	Homestead, Pa.	W
1134	2000	68	6600	25	28" Rail Mill	Direct	906	Illinois Steel Co.	Gary, Ind.	GE
1135	2000	75	2200	25	Blooming Mill	Direct	1916	Wickwire Spencer Steel Co.	Buffalo, N. Y.	GE
1136	2000	83	6600	25	96" Plate Mill	Coupled	1918	Youngstown Sheet & Tube Co.	Youngstown, Ohio	AC
1137	2000	83	6600	25	84" Plate Mill	Coupled	1918	Youngstown Sheet & Tube Co.	Youngstown, Ohio	AC
1138	2000	85-165	600	d.c.	21" Cont. Sheet Bar and Skelp Mill	Direct	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE
1139	2000	85-165	600	d.c.	21" Cont. Sheet Bar and Skelp Mill	Direct	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE
1140	2000	85-165	600	d.c.	21" Cont. Sheet Bar and Skelp Mill	Direct	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE
1141	2000	94	2200	25	18" Merchant Mill	Direct	1912	Forged Steel Wheel Co.	Butler, Pa.	GE
1142	2000-2000-2000	100-83.3-65	6600	25	12" Structural Mill	Direct	1916	Bethlehem Steel Co.	Bethlehem, Pa.	GE
1143	2000	113	6600	25	12" Merchant Mill	Direct	1909	Illinois Steel Co.	Gary, Ind.	W
1144	2000	134-275	600	d.c.	10" Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	W
1145	2000	163-113	6600	25	10" Merchant Mill	Direct	1909	Illinois Steel Co.	Gary, Ind.	W
1146	2000	200-400	600	d.c.	Hot Strip Mill	Geared	1926	Columbia Steel Co.	Butler, Pa.	GE
1147	2000	200-400	600	d.c.	Hot Strip Mill	Geared	1926	Columbia Steel Co.	Butler, Pa.	GE
1148	2000	200-400	600	d.c.	Hot Strip Mill	Geared	1926	Columbia Steel Co.	Butler, Pa.	GE
1149	2000	200-400	600	d.c.	Hot Strip Mill	Geared	1926	Columbia Steel Co.	Butler, Pa.	GE

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1150	2000	200-400	600	d.c.	14"-12" Skelp Mill	Geared	1926	Wheeling Steel Co.	Benwood, W. Va.	GE
1151	2000	200-400	600	d.c.	14"-12" Skelp Mill	Geared	1926	Wheeling Steel Co.	Benwood, W. Va.	GE
1152	2000	200-400	600	d.c.	14"-12" Skelp Mill	Geared	1926	Wheeling Steel Co.	Benwood, W. Va.	GE
1153	2000	200-400	600	d.c.	Strip Sheet Mill	Direct	1926	Weirton Steel Co.	Weirton, W. Va.	GE
1154	2000	200-400	600	d.c.	Strip Sheet Mill	Direct	1926	Weirton Steel Co.	Weirton, W. Va.	GE
1155	2000-1700	210-680	600	d.c.	14" Continuous Mill	Direct	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
1156	2000	214	6600	25	40" Rail Mill	Geared	1906	Illinois Steel Co.	Gary, Ind.	GE
1157	2000	214	6600	25	40" Rail Mill	Geared	1906	Illinois Steel Co.	Gary, Ihd.	GE
1158	2000	214	6600	25	40" Billet Mill	Geared	1907	Illinois Steel Co.	Gary, Ind.	GE
1159	2000	214	6600	25	40" Billet Mill	Geared	1907	Illinois Steel Co.	Gary, Ind.	GE
1160	2000	214	2200	25	Jobbing Plate Mill	Geared	1925	Otis Steel Co.	Cleveland, Ohio	GE
1161	2000	230-460	600	d.c.	Merchant Mill	Direct	1925	International Harvester Co.	Chicago, Ill.	W
1162	2000	230-460	600	d.c.	Merchant Mill	Direct	1925	International Harvester Co.	Chicago, Ill.	W
1163	2000	230-460	600	d.c.	Merchant Mill	Direct	1925	International Harvester Co.	Chicago, Ill.	W
1164	2000	230-460	600	d.c.	Sheet Mill	Geared	1926	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
1165	2000	234-161	2200	60	10" Skelp (Finishing) Mil	Belt	1916	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
1166	2000	234	2200	60	Sheet Mill	Geared	1919	Newton Steel Co.	Newton Falls, Ohio	W
1167	2000	234	2200	60	Tin Mill	Geared	1920	National Enam. & Stamping Co.	St. Louis, Mo.	W
1168	2000	234	2200	60	Sheet Mill	Geared	1921	Newton Steel Co.	Newton Falls, Ohio	W
1169	2000	234	2200	60	Sheet Mill	Geared	1923	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
1170	2000	240	2200	60	32" Blooming Mill	Geared	1915	Mansfield Sheet & Tin Plate Co.	Mansfield, Ohio	GE
1171	2000	240	2200	60	18" Sheet Bar Mill	Geared	1920	National Enam. & Stamping Co.	Granite City, Ill.	GE
1172	2000	240	2200	60	Sheet Mill	Geared	1919	Republic Iron & Steel Co.	Niles, Ohio	GE
1173	2000	244	2200	25	90" Plate Mill	Rope	1912	Inland Steel Co.	Indiana Harbor, Ind.	W
1174	2000	250-150	2200	60	Morgan Continuous Mill	Coupled	1919	Interstate Iron & Steel Co.	Chicago, Ill.	AC
1175	2000-2000	250-161	6600	25	10" Skelp Mill	Geared	1915	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
1176	2000	250	6600	25	Sheet Mill	Geared	1920	Youngstown Sheet & Tube Co.	Youngstown, Ohio	GE
1177	2000	250	6600	25	Sheet Mill	Geared	1920	Youngstown Sheet & Tube Co.	Youngstown, Ohio	GE
1178	2000	260-800	600	d.c.	14" Continuous Mill	Direct	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
1179	2000	294	6600	25	14" Cont. Skelp Mill	Coupled	1924	Gary Tube Co.	Gary, Ind.	AC
1180	2000	315-500	600	d.c.	10" Merchant Mill	Geared	1926	Illinois Steel Co.	Gary, Ind.	GE
1181	2000	350-234	2200	60	10" Skelp (Roughing) Mill	Geared	1917	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
1182	2000	375	2200	25	84" Plate Mill	Geared	1916	Donner Steel Co.	Buffalo, N. Y.	GE
1183	2000	375	2200	25	Wheel Mill	Geared	1916	Bethlehem Steel Co.	Johnstown, Pa.	AC
1184	2000-2000-1600	450-360-270	2200	60	16" Hot Strip Mill	Geared	1920	Trumbull Steel Co.	Warren, Ohio	GE
1185	2000-2000-1600	450-360-270	2200	60	16" Hot Strip Mill	Geared	1920	Trumbull Steel Co.	Warren, Ohio	GE
1186	2000-2000-1600	450-360-270	2200	60	16" Hot Strip Mill	Geared	1920	Trumbull Steel Co.	Warren, Ohio	GE
1187	2000	450	6600	60	Rail Mill Roughing Stand	Geared	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
1188	2000	450	6600	60	25" Structural Mill	Geared	1926	Colorado Fuel & Iron Co.	Minnequa, Col.	GE
1189	2000	505	6600	60	Plate Mill	Geared	1922	American Rolling Mills Co.	Ashland, Ky.	W
1190	2000	505	6600	60	Plate Mill	Geared	1922	American Rolling Mills Co.	Ashland, Ky.	W
1191	2000	600	6600	60	Sheet Mill	Geared	1924	Tennessee Coal, Iron & R. R. Co.	Fairfield, Ala.	GE
1192	2000	600	6600	60	Fin. Stand of 24" Struc. Mill	Geared	1924	Tennessee Coal, Iron & R. R. Co.	Fairfield, Ala.	GE
1193	2000	600	6600	60		Geared	1925	Tenn. Coal, Iron & R. R. Co.	Fairfield, Ala.	GE
1194	2000-1600-1200	625-500-375	6600	25	12" Strip Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	GE
1195	2000-1600-1200	625-500-375	6600	25	14" Bar Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	GE
1196	2070-1650-1205	235-187.5-137	6600	25	20" Hot Strip Mill	Direct	1920	Illinois Steel Co.	Gary, Ind.	GE
1197	2100	50-125	700	d.c.	42" Universal Plate Mill	Direct	1916	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
1198	2100	47-120	700	d.c.	34" Blooming Mill	Direct	1916	Penn Seaboard Steel Corporation	New Castle, Del.	W
1199	2100-2100	150-310	600	d.c.	14" Continuous Mill	Direct	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
1200	2100-1600	150-460	600	d.c.	14" Continuous Mill	Direct	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
1201	2150	50-100	535	d.c.	Reversing Bar Mill	Direct	1926	Standard Seamless Tube Co.	Economy, Pa.	GE
1202	2200	50-120	600	d.c.	40" Universal Plate Mill	Direct	1919	Dominion Foundrys & Steel Co.	Hamilton, Ont.	W
1203	2200	70-150	600	d.c.	28" Blooming Mill	Direct	1920	Atlantic Steel Co.	Atlanta, Ga.	W
1204	2200-2000-1800	275-250-225	6600	25	10" Bar Mill, No. 15	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
1205	2200-2000-1800	275-250-225	6600	25	18" Band Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio,	GE
1206	2200	505-303	2200	60	18" Bar (Finishing) Mill	Geared	1919	Central Steel Co.	Massillon, Ohio	W
1207	2300-1300	115.4-65	6600	25	10" Skelp Mill	Geared	1915	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
1208	2360-1880-1440	410-327-250	2200	60	Rod Mill	Geared	1916	Keystone Steel & Wire Co.	Peoria, Ill.	GE
1209	2400	500	6600	25	Wire Rod Mill	Geared	1916	Illinois Steel Co.	Gary, Ind.	AC
1210	2400	505	2200	60	22" Bar Mill	Geared	1926	Pacific Coast Steel Co.	Seattle, Wash.	W
1211	2470-1725-1235	430-300-215	2200	25	Rod Mill	Geared	1916	Wickwire Spencer Steel Co.	Buffalo, N. Y.	GE
1212	2500	53-80	660	d.c.	Reversing Plate Mill	Direct	1926	Lukens Steel Co.	Coatesville, Pa.	GE
1213	2500	82	6600	60	28" Structural Mill	Direct	1917	Tennessee Coal, Iron & R. R. Co.	Fairfield, Ala.	GE
1214	2500	113-91	6600	25	12" Merchant Mill	Geared	1909	Illinois Steel Co.	Gary, Ind.	W
1215	2500	146	6600	25	16" Cont. Skelp Mill	Coupled	1924	Gary Tube Co.	Gary, Ind.	AC
1216	2500	150	6600	25	28" Billet Mill	Geared	1923	Pittsburgh Crucible Steel Co.	Midland, Pa.	GE
1217	2500	160-320	600	d.c.	Continuous Sheet Mill	Geared	1926	American Sheet & Tinplate Co.	Gary, Ind.	W
1218	2500	160-320	600	d.c.	Continuous Sheet Mill	Geared	1926	American Sheet & Tinplate Co.	Gary, Ind.	W
1219	2500	160-320	600	d.c.	Continuous Sheet Mill	Geared	1926	American Sheet & Tinplate Co.	Gary, Ind.	W
1220	2500	160-320	600	d.c.	Continuous Sheet Mill	Geared	1926	American Sheet & Tinplate Co.	Gary, Ind.	W
1221	2500	160-320	600	d.c.	Continuous Sheet Mill	Geared	1926	American Sheet & Tinplate Co.	Gary, Ind.	W
1222	2500	160-320	600	d.c.	Continuous Sheet Mill	Geared	1926	American Sheet & Tinplate Co.	Gary, Ind.	W
1223	2500	184	6600	25	Skelp Mill	Rope	1908	National Tube Co.	Lorain, Ohio	W
1224	2500	184	6600	25	Skelp Mill	Rope	1908	National Tube Co.	Lorain, Ohio	W
1225	2500	187 ½	6600	25	18" Band Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	GE
1226	2500	187 ½	6600	25	18" Band Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	GE
1227	2500	200-400	600	d.c.	Strip Sheet Mill	Direct	1926	Weirton Steel Co.	Weirton, W. Va.	GE
1228	2500	200-400	600	d.c.	Strip Sheet Mill	Direct	1926	Weirton Steel Co.	Weirton, W. Va.	GE
1229	2500	200-400	600	d.c.	Strip Sheet Mill	Direct	1926	Weirton Steel Co.	Weirton, W. Va.	GE
1230	2500	235	2200	60	84" Plate (Finishing) Mil	Geared	1917	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
1231	2500	240	2200	60	Sheet Mill	Geared	1919	Wheeling Steel Corp.	Stuebenville, Ohio	GE
1232	2500	240	2200	60	24" Sheet Bar Mill	Geared	1920	Mansfield Sheet & Tin Plate Co.	Mansfield, Ohio	GE
1233	2500	247	6600	25	Piercing Mill	Geared	1923	Gary Tube Co.	Gary, Ind.	W
1234	2500	247	6600	25	Seamless Tube Mill	Geared	1925	Gary Tube Company	Gary, Ind.	W
1235	2500	252	2200	60	Skelp Mill	Geared	1917	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
1236	2500	252	2200	60	Skelp Mill	Geared	1917	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
1237	2500	257	2200	60	Piercing Mill	Geared	1925	Globe Steel Tube Co.	Milwaukee, Wis.	AC
1238	2500	295	6600	25	16" Cont. Skelp Mill	Coupled	1924	Gary Tube Co.	Gary, Ind.	AC
1239	2500	295	2200	60	18" Continuous Billet Mill	Geared	1926	American Steel & Wire Co.	Worcester, Mass.	AC
1240	2500	300	2200	25	Sheet Mill	Geared	1925	Inland Steel Co.	Indiana Harbor, Ind.	GE
1241	2500	352-167	6600	60	16" Hoop and Band Mill	Geared	1915	Weirton Steel Co.	Weirton, W. Va.	W
1252	2500	500	2200	60	22" Bar Mill	Geared	1923	Phoenix Iron Co.	Phoenixville, Pa.	W
1226	2600	81.5	6600	25	Rod (Roughing) Mill	Geared	1910	American Steel & Wire Co.	Birmingham, Ala.	W
1227	2600	320-275	600	d.c.	26" & 21" Cont. Mill	Direct	1926	Bethlehem Steel Co.	Sparrows Point, Md.	GE
1228	2600	368	6400	25	Rod Mill	Geared	1916	American Steel & Wire Co.	Cleveland, Ohio	W
1229	2750-2240-1750	262-214-167	6600	25	12" Hot Strip Mill	Direct	1920	Illinois Steel Co.	Gary, Ind.	GE
1230	2750-2500-2250	275-250-225	6600	25	14" Bar Mill, No. 14	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
1231	2870-1435	400-200	600	d.c.	10" Rod Mill	Geared	1922	Wheeling Steel Corp.	Portsmouth, Ohio	GE
1232	2900	47-120	700	d.c.	34" Blooming Mill	Direct	1917	Sharon Steel Hoop Co.	Youngstown, Ohio	W
1233	3000	40-100	600	d.c.	Seamless Tube Mill	Direct	1925	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
1234	3000	70-150	750	d.c.	24" Reversing Bar Mill	Direct	1925	Inland Steel Co.	Indiana Harbor, Ind.	GE
1235	3000	91	2200	25	Struct. (Roughing) Mill	Geared	1910	Illinois Steel Co.	South Chicago, Ill.	W
1236	3000	125	6400	25	20" Flat Mill	Coupled	1916	American Steel & Wire Co.	Cleveland, Ohio	AC
1237	3000	125-200	600	d.c.	Seamless Tube Mill	Direct	1925	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
1238	3000	150	6600	25	Wire Rod Mill	Coupled	1920	Minnesota Steel Co.	Steelton, Minn.	AC
1239	3000	150-300	250	d.c.	18"14" Structural Mill	Direct	1924	Bethlehem Steel Co.	Johnstown, Pa.	AC
1240	3000	150-300	250	d.c.	18"-14" Structural Mill	Direct	1924	Bethlehem Steel Co.	Johnstown, Pa.	AC
1241	3000-3000-3000	155-144-130	6600	60	24" Structural Mill	Direct	1917	Tennessee Coal, Iron & R. R. Co.	Fairfield, Ala.	GE

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd By
1242	3000	180–370	600	d.c.	10″ Wire Rod Mill	Geared	1926	American Steel & Wire Co.	Worcester, Mass.	W
1243	3000	184	6600	25	16″ Cont. Skelp Mill	Coupled	1924	Gary Tube Co.	Gary, Ind.	AC
1244	3000–3000	200–360	600	d.c.	14″ Continuous Mill	Geared	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
1245	3000	209	6600	25	12″ & 16″ Merchant Mill	Geared	1913	Minnesota Steel Co.	Duluth, Minn.	W
1246	3000	235	2200	60	100″ Plate Mill	Geared	1922	National Enam. & Stamping Co.	St. Louis, Mo.	W
1247	3000	245	2200	25	90″ Plate Mill	Geared	1920	Inland Steel Co.	Indiana Harbor, Ind.	W
1248	3000	250	6600	25	18″ Cont. Billet Mill	Geared	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
1249	3000–2500–2000	300–250–200	6600	25	18″ Band Mill, No. 13	Direct	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
1250	3000–2500–2000	300–250–200	6600	25	12″ Hoop Mill, No. 12	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
1251	3000	325–485	600	d.c.	24″ Structural Mill	Geared	1923	Phoenix Iron Co.	Phoenixville, Pa.	W
1252	3000	354–212	2200	60	Skelp Mill	Geared	1920	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
1253	3000	360	6600	60	28″ Rail Mill	Geared	1919	Dominion Iron & Steel Co.	Sydney, N. S.	GE
1254	3000	375	2200	25	14″ Merchant Mill	Geared	1916	Donner Steel Co.	Buffalo, N. Y.	GE
1255	3000	375	2200	25	18″ Billet Mill	Geared	1916	Donner Steel Co.	Buffalo, N. Y.	GE
1256	3000	375	6600	25	24″ Sheet Bar Mill	Geared	1922	Otis Steel Co.	Cleveland, Ohio	GE
1257	3000	450	6600	60	Rod Mills No. 1 to No. 6	Geared	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
1258	3000	450	6600	60	Rod Mills No. 10 to No. 15	Geared	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
1259	3000	450	6600	60	Rail Mill, Intermediate Stand	Geared	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
1260	3000	450	6600	60	25″ Structural Mill	Geared	1926	Colorado Fuel & Iron Co.	Minnequa, Col.	GE
1261	3000–2250–1500	500–375–250	2200	25	24″ Sheet Bar Mill	Geared	1926	Inland Steel Co.	Indiana Harbor, Ind.	GE
1262	3000	500	6600	25	26″ Rail Mill	Geared	1924	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
1263	3000	500	6600	25	26″ Rail Mill	Geared	1924	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
1264	3000	505–300	2200	60	12″ Merchant Mill	Geared	1920	United Alloy Steel Corporation	Canton, Ohio	W
1265	3100	70–150	600	d.c.	Universal Plate Mill	Direct	1925	International Harvester Co.	Chicago, Ill.	W
1266	3200	50–120	700	d.c.	34″ Struct. (Rough). Mill	Direct	1915	Inland Steel Co.	Indiana Harbor, Ind.	W
1267	3200	50–120	700	d.c.	28″ Struct. (Fin.) Mill	Direct	1915	Inland Steel Co.	Indiana Harbor, Ind.	W
1268	3200	91	6600	25	18″ Merchant Mill	Geared	1909	Illinois Steel Co.	Gary, Ind.	W
1269	3200	91	6600	25	14″ Merchant Mill	Geared	1909	Illinois Steel Co.	Gary, Ind.	W
1270	3250	40	500	d.c.	36″ Blooming Mill	Direct	1916	American Rolling Mill Co.	Ashland, Ky.	GE
1271	3250	40	500	d.c.	34″ Blooming Mill	Direct	1916	Keystone Steel & Wire Co.	Peoria, Ill.	GE
1272	3250	94	6600	25	18″ Sheet Bar Mill	Direct	1916	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
1273	3500	50–120	700	d.c.	34″ Blooming Mill	Direct	1925	Kokomo Steel & Wire Co.	Kokomo, Ind.	W
1274	3500	50–120	700	d.c.	36″ Blooming Mill	Direct	1925	Phoenix Iron Co.	Phoenixville, Pa.	W
1275	3500	50–100	650	d.c.	Rail Mill	Direct	1925	Bethlehem Steel Co.	Steelton, Pa.	GE
1276	3500	70–100	525	d.c.	32″ Blooming Mill	Direct	1913	Steel Company of Canada	Hamilton, Ont.	W
1277	3500	50–75	700	d.c.	34″ Blooming Mill	Direct	1914	Central Steel Co.	Massillon, Ohio	W
1278	3500	50–120	700	d.c.	35″-Structural Mill	Direct	1924	Bethlehem Steel Co.	Lackawanna, N. Y.	W
1279	3500	92	2200	60	18″ Sheet Bar Mill	Direct	1916	Trumbull Steel Co.	Warren, Ohio	GE
1280	3500	92	2200	60	21″ Sheet Bar Mill	Direct	1918	Trumbull Steel Co.	Warren, Ohio	GE
1281	3500	600	2200	50	Piercing Mill	Geared	1925	Standard Seamless Tube Co.	Economy, Pa.	GE
1282	3600	40–90	600	d.c.	35″ Blooming Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	W
1283	3600	40–90	600	d.c.	40″ Blooming Mill	Direct	1917	Illinois Steel Co.	Gary, Ind.	W
1284	3600	150–300	250	d.c.	18-14″ Structural Mill	Direct	1924	Bethlehem Steel Co.	Lackawanna, N. Y.	AC
1285	3600–1940	290–156	2200	60	21″ Cont. Sheet Bar and Skelp Mill	Geared	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE
1286	3750	500	2200	60	112″ 3-High Plate Mill	Geared	1925	Lukens Steel Company	Coatesville, Pa.	W
1287	4000	0–150	575	d.c.	36″ Universal Plate Mill	Direct	1905	Illinois Steel Co.	South Chicago, Ill.	W
1288	4000	58–120	700	d.c.	34″ Blooming Mill	Direct	1924	Donner Steel Co.	Buffalo, N. Y.	GE
1289	4000	58–140	750	d.c.	34″ Reversing Blooming	Direct	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
1290	4000	80	600	d.c.	30″ Universal Skelp Mill	Direct	1922	Youngstown Sheet & Tube Co.	Youngstown, Ohio	GE
1291	4000	0–80	1200	d.c.	34″ Blooming Mill	Coupled	1912	Algoma Steel Co.	Sault Ste. Marie, Can	AC
1292	4000	82	6600	60	110″ Plate Mill	Direct	1917	Tennessee Coal, Iron & R. R. Co.	Fairfield, Ala.	GE
1293	4000	82	6600	60	110″ Plate Mill	Direct	1918	Dominion Iron & Steel Corp.	Sydney, N. S.	GE
1294	4000	83	6600	25 cy.	110″ Plate Mill	Direct	1916	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
1295	4000	83	6600	25 cy.	24″ Cont. Billet Mill	Direct	1916	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
1296	4000	83	6600	25 cy.	110″ Plate Mill	Direct	1917	Carnegie Steel Co.	Homestead, Pa.	GE
1297	4000	83	6600	60 cy.	33″ Structural Mill	Direct	1920	Carnegie Steel Co.	Homestead, Pa.	GE
1298	4000	83.3	6600	25	26″ x 21″ Cont. Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	GE
1299	4000	93	6600	60 cy.	18″ Continuous Bar Mill	Direct	1919	Weirton Steel Co.	Weirton, W. Va.	W
1300	4000	93	6600	60 cy.	21″ Continuous Bar Mill	Direct	1919	Weirton Steel Co.	Weirton, W. Va.	W
1301	4000	147	6600	25 cy.	20″ Merchant Mill	Geared	1916	Illinois Steel Co.	Gary, Ind.	W
1302	4000	200	6600	60 cy.	120″ Plate Mill	Geared	1920	Worth Steel Co.	Claymont, Del.	GE
1303	4000	360	2200	60 cy.	21″ Sheet Bar Mill	Geared	1917	Sharon Steel Hoop Co.	Lowellville, Ohio	GE
1304	4000	375	6600	25	Rail Mill	Geared	1925	Bethlehem Steel Co.	Steelton, Pa.	GE
1305	4000	375	6600	25	10″ Cont. Wire Rod Mill	Geared	1925	Bethlehem Steel Co.	Sparrows Point, Md.	GE
1306	4200	93	2200	60 cy.	Continuous Bar Mill	Direct	1915	United Alloy Steel Corporation	Canton, Ohio	W
1307	4500–4500	67 5–110	500	d.c.	14″ Merchant Mill	Geared	1923	Ford Motor Co.	Detroit, Mich.	GE
1308	4500	120–255	750	d.c.	Univ. Skelp Mill	Coupled	1925	Gary Tube Co.	Gary, Ind.	AC
1309	4500–4500	500–300	2200	25 cy.	14″ Merchant Mill	Geared	1923	Inland Steel Co.	Indiana Harbor, Ind.	GE
1310	5000	40–120	600	d.c.	40″ Blooming Mill	Direct	1916	National Tube Co.	Lorain, Ohio	W
1311	5000	40–120	600	d.c.	35″ Blooming Mill	Direct	1916	Youngstown Sheet & Tube	Indiana Harbor, Ind.	W
1312	5000	40–120	600	d.c.	35″ Blooming Mill	Direct	1915	United Alloy Steel Corporation	Canton, Ohio	W
1313	5000	50–120	700	d.c.	36″ Rev. Rougher Mill	Direct	1924	Carnegie Steel Co.	Homestead, Pa.	W
1314	5000	70–150	900	d.c.	27″ Rev. Hot Strip Mill	Direct	1926	Columbia Steel Co.	Butler, Pa.	GE
1315	5000	75–120	700	d.c.	48″ Universal Plate Mill	Direct	1923	Bethlehem Steel Co.	Lackawanna, N. Y.	W
1316	5000	75–150	700	d.c.	28″ Structural Mill	Direct	1924	Bethlehem Steel Corp.	Lackawanna, N. Y.	W
1317	5000	99	13200	60	18″ Billet Mill	Direct	1925	Ford Motor Company	Detroit, Mich.	W
1318	5000	197	2200	60 cy.	132″ Plate Mill	Geared	1917	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
1319	5000	370	6600	25 cy.	132″ Plate Mill	Geared	1923	Illinois Steel Co.	South Chicago, Ill.	W
1320	5000	450	2300	60 cy.	18″ Continuous Sheet Bar and Billet Mill	Geared	1919	Wheeling Steel Corporation	Portsmouth, Ohio	GE
1213	5000–4000–3000	450–360–270	2200	60	16″ Hot Strip Mill	Geared	1925	Trumbull Steel Co.	Warren, Ohio	GE
1322	5000	595	6600	60 cy.	28″ 3 Stand Rail	Coupled	1921	Tennessee Coal, Iron & R. R. Co.	Birmingham, Ala.	AC
1323	5000	594	6600	60 cy.	Sheet & Billet Mill	Geared	1924	Tennessee Coal, Iron & R. R. Co.	Birmingham, Ala.	GE
1324	5500–4400–3400	170–136–105	6600	25 cy.	20″ Hot Strip Mill	Direct	1920	Illinois Steel Co.	Gary, Ind.	GE
1325	5500	370	6600	25 cy.	16″ Cont. Skelp Mill	Geared	1924	Gary Tube Co.	Gary, Ind.	AC
1326	5610–4500–3370	156–125–93.6	6600	25	12″ Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, O.	GE
1327	5750	94	6600	25 cy.	21″ Cont. Billet Mill	Direct	1914	McKinney Steel Co.	Cleveland, Ohio	GE
1328	5750	94	6600	25 cy.	18″ Bar Mill	Direct	1915	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
1329	5750	94	6600	25 cy.	21″ Bar Mill	Direct	1921	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
1330	5750	94	6600	25 cy.	18″ Billet Mill	Geared	1923	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
1331	5750	94	6600	25 cy.	21″ Billet Mill	Geared	1923	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
1332	6000	40–120	600	d.c.	44″ Blooming Mill	Direct	1919	Bethlehem Steel Co.	Steelton, Pa.	W
1333	6000	75	6600	25 cy.	40″ Rail Mill	Direct	1906	Illinois Steel Co.	Gary, Ind.	GE
1334	6000	82	6600	25 cy.	28″ Rail Mill	Geared	1914	Minnesota Steel Co.	Duluth, Minn.	W
1335	6000	83	6600	25 cy.	28″ Rail Mill	Direct	1906	Illinois Steel Co.	Gary, Ind.	GE
1336	6000	83	6600	25 cy.	32″ Billet Mill	Direct	1907	Illinois Steel Co.	Gary, Ind.	GE
1337	6000	83	6600	25 cy.	24″ Billet Mill	Direct	1907	Illinois Steel Co.	Gary, Ind.	GE
1338	6000	83	6600	25 cy.	18″ Billet Mill	Direct	1907	Illinois Steel Co.	Gary, Ind.	GE
1339	6000	83	6600	25 cy.	18″ Sheet Bar Mill	Direct	1910	Illinois Steel Co.	Gary, Ind.	GE
1340	6000	88	6600	25 cy.	28″ Rail Mill	Direct	1906	Illinois Steel Co.	Gary, Ind.	GE
1341	6000	98	6600	25 cy.	28″–32″ Structural Mill	Direct	1924	Carnegie Steel Co.	Homestead, Pa.	W
1342	6250	368	2200	25 cy.	24″ Cont. Billet Mill	Geared	1922	Inland Steel Co.	Indiana Harbor, Ind.	W
1343	6500	40–120	600	d.c.	40″ Blooming Mill	Direct	1915	Inland Steel Co.	Indiana Harbor, Ind.	W
1344	6500	50	600	d.c.	36″ Blooming Mill	Direct	1916	Trumbull Steel Co.	Warren, Ohio	GE
1345	6500	50	600	d.c.	40″ Blooming Mill	Direct	1916	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
1346	6500	50	600	d.c.	40″ Blooming Mill	Direct	1922	Otis Steel Co.	Cleveland, Ohio	GE
1347	6500–4500	107–53	6600	25 cy.	60″ 3 High Universal Plate Mill	Direct	1909	Illinois Steel Co.	Gary, Ind.	GE

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1348	6500	187.5	6600	25	26″ x 21″ Cont.	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	GE
1349	6700–5000–3320	500–375–250	6600	25	26″ x 21″ Cont.	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	GE
1350	7000	40–120	700	d.c.	Blooming Mill	Coupled	1925	Illinois Steel Co.	South Chicago, Ill.	AC
1351	7000	0–50–120	700	d.c.	44″ Blooming Mill	Direct	1924	Carnegie Steel Co.	Homestead, Pa.	W
1352	7000	50–120	700	d.c.	40″ Rev. Blooming Mill	Direct	1923	Bethlehem Steel Co.	Lackawanna, N. Y.	W
1353	7000	50–120	700	d.c.	40″ Blooming Mill	Direct	1924	International Harvester Co.	Chicago, Ill.	W
1354	7000	50–120	700	d.c.	36″ Rev. Rougher Mill	Direct	1925	Inland Steel Co.	Indiana Harbor, Ind.	W
1355	7000	50–120	700	d.c.	52″ Structural Mill	Direct	1925	Carnegie Steel Co.	Homestead, Pa.	W
1356	7000	50–120	700	d.c.	52″ Structural Mill	Direct	1925	Carnegie Steel Co.	Homestead, Pa.	W
1357	7000	50–100	650	d.c.	46″ Slabbing Mill	Direct	1925	Bethlehem Steel Co.	Sparrows Point, Md.	GE
1358	7000	0–50–120	700	d.c.	40″ Rev. Blooming Mill	Direct	1926	Forged Steel Wheel Co.	Butler, Pa.	W
1359	7000	55	900	d.c.	45″ Blooming Mill	Direct	1917	Tennessee Coal, Iron & R. R. Co.	Fairfield, Ala.	GE
1360	7000	50 100	700	d.c.	60″ Universal Plate Mill	Direct	1919	Bethlehem Steel Co.	Sparrows Pt., Md.	W
1361	7000	81.7	6600	25 cy.	160″ Plate Mill	Direct	1917	Illinois Steel Co.	Gary, Ind.	W
1362	7500–4040	250–134	2200	50	21″ Continuous Sheet Bar and Skelp Mill	Geared	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE
1363	7500	375	2200	25	19″ Continuous Mill	Geared	1926	Inland Steel Co.	Indiana Harbor, Ind.	W
1364	8000	40–120	700	d.c.	54″ Blooming Mill	Direct	1925	Carnegie Steel Co.	Homestead, Pa.	W
1365	8000	150	600	d.c.	28″ Rail Mill	Direct	1917	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
1366	8000	240	13200	60 cy.	Interrupted Continuous Blooming Mill	Geared	1923	Ford Motor Co.	Detroit, Mich.	GE
1367	9000	107	6600	25	Continuous Billet Bar Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	GE

RAIL AND STRUCTURAL MILL DRIVES

No	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	400	125	230	d.c.	12″ Structural Mill	Direct	1919	Eastern Steel Co.	Pottsville, Pa.	W
2	500	250–600	250	d.c.	12–9″ Mill	Coupled	1925	Bethlehem Steel Co.	Johnstown, Pa.	AC
3	750	500	230	d.c.	14″ Rail Rerolling Mill	Geared	1925	Ford Motor Co.	River Rouge, Mich.	AC
4	900	425–640	250	d.c.	12″ 10–Mill	Coupled	1925	Bethlehem Steel Co.	Johnstown, Pa.	AC
5	1000	133	2200	25 cy.	Structural (Finish) Mill	Direct	1910	Illinois Steel Co.	South Chicago, Ill.	W
6	1000	200–480	250	d.c.	12–9″ Mill	Geared	1925	Bethlehem Steel Co.	Johnstown, Pa.	AC
7	1000	200–480	250	d.c.	12–9″ Mill	Geared	1925	Bethlehem Steel Co.	Johnstown, Pa.	AC
8	1000–2000	200–400–600	250	d.c.	12–10″ Gautier Mill	Geared	1925	Bethlehem Steel Co.	Johnstown, Pa.	AC
9	1000	225–168	4000	60	Rail Rerolling Mill	Direct	1926	Inland Steel Co.	Indiana Harbor, Ind.	GE
10	1000	225–168	4000	60	Rail Rerolling Mill	Direct	1926	Inland Steel Co.	Indiana Harbor, Ind.	GE
11	1000	590–495	5600	60 cy.	24″ Structural Mill	Geared	1917	Tennessee Coal, Iron & R. R. Co.	Fairfield, Ala.	W
12	1000	720	4000	60 cy.	18″ 2-Stand Rerolling Rail Mill	Geared	1923	Buckeye Rolling Mill Co.	Newark, Ohio	GE
13	1200	450	6600	60	Rail Mill, Finishing Stand	Geared	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
14	1200	500	2200	25 cy.	28″ Rail Mill	Geared	1914	Bethlehem Steel Co.	Steelton, Pa.	GE
15	1350–1000	214–161	4400	25	Rail Rerolling Mill	Direct	1926	Buffalo Steel Co.	Tonawanda, N. Y.	GE
16	1350–1000	214–161	4400	25	Rail Rerolling Mill	Direct	1926	Buffalo Steel Co.	Tonawanda, N. Y.	GE
17	1500	100–125	220	d.c.	Light Rail Mill	Direct	1905	Carnegie Steel Co.	Bessemer, Pa.	W
18	1500	100–125	220	d.c.	Light Rail Mill	Direct	1905	Carnegie Steel Co.	Bessemer, Pa.	W
19	1500	133–81.5	6600	25 cy.	18″ Structural Mill	Direct	1915	Bethlehem Steel Co.	Bethlehem, Pa.	W
20	1500	150–300	250	d.c.	18-14″ Structural Mill	Direct	1924	Bethlehem Steel Corporation	Johnstown, Pa.	AC
21	1500	150–300	250	d.c.	18-14″ Structural Mill	Direct	1924	Bethlehem Steel Corporation	Johnstown, Pa.	AC
22	1500–1250–1000	360–300–240	2200	25 cy.	28″ Rail Mill	Geared	1920	Bethlehem Steel Co.	Steelton, Pa.	GE
23	1500	600	2200	60 cy.	Light Rail Mill	Geared	1919	West Va. Rail Co.	Huntington, W. Va.	AC
24	1700	250–500	250	d.c.	12–10″ Mill	Geared	1925	Bethlehem Steel Co.	Johnstown, Pa.	AC
25	1750	150–300	230	d.c.	18-14″ Structural Mill	Direct	1924	Bethlehem Steel Corp.	Lackawanna, N. Y.	AC
26	1800	120–80	2200	25 cy.	Light Rail Mill	Direct	1905	Illinois Steel Co.	South Chicago, Ill.	W
27	1800	120–80	2200	25 cy.	Light Rail Mill	Direct	1905	Illinois Steel Co.	South Chicago, Ill.	W
28	1800	150–300	250	d.c.	18-14″ Structural Mill	Direct	1924	Bethlehem Steel Co.	Lackawanna, N. Y.	AC
29	1800	366	2200	25 cy.	22″ Structural Mill	Geared	1919	Scullin Steel Co.	St. Louis, Mo.	W
30	2000	0–57–163	700	d.c.	52″ Struct. Edging Mill	Direct	1926	Carnegie Steel Co.	Homestead, Pa.	W
31	2000	0–57–163	700	d.c.	52″ Struct. Edging Mill	Direct	1926	Carnegie Steel Co.	Homestead, Pa.	W
32	2000	68	6600	25 cy.	28″ Rail Mill	Direct	1906	Illinois Steel Co.	Gary, Ind.	GE
33	2000–2000–2000	100–83.3–65	6600	25 cy.	12″ Structural Mill	Direct	1916	Bethlehem Steel Co.	Bethlehem, Pa.	GE
34	2000	214	6600	25 cy.	40″ Rail Mill	Geared	1906	Illinois Steel Co.	Gary, Ind.	GE
35	2000	214	6600	25 cy.	40″ Rail Mill	Geared	1906	Illinois Steel Co.	Gary, Ind.	GE
36	2000	450	6600	60	Rail Mill	Geared	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
37	2000	450	6600	60	25″ Structural Mill	Geared	1926	Colorado Fuel & Iron Co.	Minnequa, Col.	GE
38	2000	600	6600	60 cy.	Fin. Stand of 24″ Structural Mill	Geared	1924	Tenn. Coal, Iron & R.R. Co.	Fairfield, Ala.	GE
39	2500	82	6600	60 cy.	28″ Structural Mill	Direct	1917	Tenn. Coal, Iron & R.R. Co.	Fairfield, Ala.	GE
40	3000	91	2200	25 cy.	Structural (Rough.) Mill	Geared	1910	Illinois Steel Co.	South Chicago, Ill.	W
41	3000	150–300	250	d.c.	18-14″ Structural Mill	Direct	1924	Bethlehem Steel Corp.	Johnstown, Pa.	AC
42	3000	150–300	250	d.c.	18-14″ Structural Mill	Direct	1924	Bethlehem Steel Corp.	Johnstown, Pa.	AC
43	3000–3000–3000	155–144–130	6600	60 cy.	24″ Structural Mill	Direct	1917	Tenn. Coal, Iron & R.R. Co.	Fairfield, Ala.	GE
44	3000	325–485	600	d.c.	24″ Structural Mill	Geared	1923	Phoenix Iron Co.	Phoenixville, Pa.	W
45	3000	360	6600	60 cy.	28″ Rail Mill	Geared	1919	Dominion Iron & Steel Co.	Sydney, N. S.	GE
46	3000	450	6600	50	Rail Mill	Geared	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
47	3000	450	6600	60	25″ Structural Mill	Geared	1926	Colorado Fuel & Iron Co.	Minnequa, Col.	GE
48	3000	500	6600	25 cy.	26″ Rail Mill	Geared	1924	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
49	3000	500	6600	25 cy.	26″ Rail Mill	Geared	1924	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
50	3200	50–120	700	d.c.	34″ Rev. Struct. (Rough.)	Direct	1915	Inland Steel Co.	Indiana Harbor, Ind.	W
51	3200	50–120	700	d.c.	28″ Structural (Fin.) Mill	Direct	1915	Inland Steel Co.	Indiana Harbor, Ind.	W
52	3500	50–120	700	d.c.	35″ Struct. Mill (Rough.)	Direct	1924	Bethlehem Steel Corp.	Lackawanna, N. Y.	W
53	3500	50–100	650	d.c.	Rail Mill	Direct	1925	Bethlehem Steel Co.	Steelton, Pa.	GE
54	3500	150–300	230	d.c.	18-14″ Structural Mill	Direct	1924	Bethlehem Steel Corp.	Lackawanna, N. Y.	AC
55	3600	150–300	250	d.c.	18-14″ Structural Mill	Direct	1924	Bethlehem Steel Co.	Lackawanna, N. Y.	AC
56	4000	83	6600	60 cy.	33″ Structural Mill	Direct	1920	Carnegie Steel Co.	Homestead, Pa.	GE
57	4000	375	6600	25	Rail Mill	Geared	1925	Bethlehem Steel Co.	Steelton, Pa.	GE
58	5000	50–120	700	d.c.	36″ Struct. (Rough.) Mill	Direct	1924	Carnegie Steel Co.	Homestead, Pa.	W
59	5000	75–150	700	d.c.	28″ Structural (Fin.) Mill	Direct	1924	Bethlehem Steel Corp.	Lackawanna, N. Y.	W
60	5000	595	6600	60 cy.	28″ 3 Stand Rail Mill	Coupled	1921	Tenn. Coal, Iron & R.R. Co.	Birmingham, Ala.	AC
61	6000	75	6600	25 cy.	40″ Rail Mill	Direct	1906	Illinois Steel Co.	Gary, Ind.	GE
62	6000	83	6600	25 cy.	28″ Rail Mill	Direct	1906	Illinois Steel Co.	Gary, Ind.	GE
63	6000	83	6600	25 cy.	28″ Rail Mill	Geared	1913	Minnesota Steel Co.	Duluth, Minn.	W
64	6000	88	6600	25 cy.	28″ Rail Mill	Direct	1906	Illinois Steel Co.	Gary, Ind.	GE
65	6000	98	6600	25 cy.	28″-32″ Structural Mill	Direct	1924	Carnegie Steel Co.	Homestead, Pa.	W
66	7000	50–150	700	d.c.	52″ Structural Mill	Direct	1925	Carnegie Steel Co.	Homestead, Pa.	W
67	7000	50–150	700	d.c.	52″ Structural Mill	Direct	1925	Carnegie Steel Co.	Homestead, Pa.	W
68	8000	150	600	d.c.	28″ Rail Mill	Direct	1917	Bethlehem Steel Co.	Lackawanna, N. Y.	GE

PLATE MILL DRIVES

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	300	575	2200	60 cy.	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
2	300	575	2200	60 cy.	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
3	300	575	2200	60 cy.	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
4	300	575	2200	60 cy.	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
5	300	575	2200	60 cy.	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
6	300	575	2200	60 cy.	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
7	300	575	2200	60 cy.	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
8	400	20	230	d.c.	32 x 48 Plate Mill	Coupled	1910	American Sheet & Tin Plate Co.	Gary, Ind.	CW
9	400	20	230	d.c.	32 x 48 Plate Mill	Coupled	1910	American Sheet & Tin Plate Co.	Gary, Ind.	CW
10	400	20	230	d.c.	32 x 48 Plate Mill	Coupled	1910	American Sheet & Tin Plate Co.	Gary, Ind.	CW
11	400	20	230	d.c.	32 x 48 Plate Mill	Coupled	1910	American Sheet & Tin Plate Co.	Gary, Ind.	CW
12	500	200	500	d.c.	78" Rev. Brass Plate Mill	Geared	1920	West Virginia Metal Products Co.	Fairmont, W. Va.	W
13	500	575	2200	60 cy.	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
14	500	575	2200	60 cy.	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
15	600	885	2200	60 cy.	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
16	600	885	2200	60 cy.	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
17	800	0-37-70	500	d.c.	Plate Mill	Coupled	1919	Universal Rolling Mill Co.	Bridgeville, Pa.	AC
18	1000	50-175	600	d.c.	24" Rev. Universal Plate	Direct	1916	Central Steel Co.	Massillon, Ohio	W
19	1100-1500	91	2200	25 cy.	84" Plate (Finishing) Mill	Direct	1909	American Sheet & Tin Plate Co.	Gary, Ind.	W
20	1200	25-50	330	d.c.	Reversing Plate Mill	Direct	1926	Lukens Steel Co.	Coatesville, Pa.	GE
21	1200	214	2200	25 cy.	84" Plate mill	Geared	1913	Otis Steel Co.	Cleveland, Ohio	GE
22	1200	500	2200	25	72" Jobbing Plate Mill	Geared	1926	Alan Wood Iron & Steel Co.	Coshocton, Pa.	GE
23	1600	214	2200	25 cy.	84" Plate Mill	Geared	1913	Otis Steel Co.	Cleveland, Ohio	GE
24	1600	244	2200	25 cy.	84" Plate (Rough.) Mill	Geared	1912	Alan Wood Iron & Steel Co.	Ivy Rock, Pa.	W
25	1600	244	2200	25 cy.	84" Plate (Finishing) Mill	Geared	1912	Alan Wood Iron & Steel Co.	Ivy Rock, Pa.	W
26	1800	40	600	d.c.	84" Reversing Plate Mill	Direct	1917	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
27	2000	83	6600	25 cy.	96" Plate Mill	Coupled	1918	Youngstown Sheet & Tube Co.	Youngstown, O.	AC
28	2000	83	6600	25 cy.	84" Plate Mill	Coupled	1918	Youngstown Sheet & Tube Co.,	Youngstown, O.	AC
29	2000	214	2200	25	Jobbing plate mill	Geared	1925	Otis Steel Co.	Cleveland, Ohio	W
30	2000	244	2200	25 cy.	90" Plate Mill	Rope	1912	Inland Steel Co.	Indiana Harbor, Ind.	W
31	2000	375	2200	25 cy.	84" Plate Mill	Geared	1916	Donner Steel Co.	Buffalo, N. Y.	GE
32	2000	505	6600	60 cy.	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
33	2000	505	6600	60 cy.	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
34	2100	50-125	700	d.c.	42" Rev. Univ. Plate Mill	Direct	1916	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
35	2200	50-120	600	d.c.	40" Rev. Univ. Plate Mill	Direct	1919	Dominion Foundrys & Steel Co.	Hamilton, Ont.	W
36	2500	53-80	660	d.c.	Reversing Plate Mill	Direct	1926	Lukens Steel Co.	Coatesville, Pa.	GE
37	2500	235	2200	60 cy.	84" Plate (Finishing) Mill	Geared	1917	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
38	3000	245	2200	25 cy.	90" Plate Mill	Geared	1920	Inland Steel Co.	Indiana Harbor, Ind.	W
39	3000	235	2200	60 cy.	100" Plate Mill	Geared	1922	Nat'l Enameling & Stamping Co.	St. Louis, Mo.	W
40	3100	70-150	600	d.c.	Universal Plate Mill	Direct	1925	International Harvester Co.	Chicago, Ill.	W
41	3750	500	2200	50	112" 3 High Plate Mill	Geared	1925	Lukens Steel Company	Coatesville, Pa.	W
42	4000	0-150	575	d.c.	36" Rev. Univ. Plate Mill	Direct	1905	Illinois Steel Co.	South Chicago, Ill.	W
43	4000	82	6600	60 cy.	110" Plate Mill	Direct	1917	Tenn. Coal, Iron & R. R. Co.	Fairfield, Ala.	GE
44	4000	83	6600	25 cy.	110" Plate Mill	Direct	1916	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
45	4000	83	6600	25 cy.	110" Plate Mill	Direct	1917	Carnegie Steel Co.	Homestead, Pa.	GE
46	4000	82	6600	60 cy.	110" Plate Mill	Direct	1918	Dominion Iron & Steel Corp.	Sydney, N. S.	GE
47	4000	200	6600	60 cy.	120" Plate Mill	Geared	1920	Worth Steel Co.	Claymont, Del.	GE
48	5000	75-100	700	d.c.	48" Rev. Univ. Plate Mill	Direct	1923	Bethlehem Steel Co.	Lackawanna, N. Y.	W
49	5000	197	2200	60 cy.	132" Plate Mill	Geared	1917	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
50	5000	370	6600	25 cy.	132" Plate Mill	Geared	1922	Illinois Steel Co.	South Chicago, Ill.	W
51	5000	370	6600	25 cy.	90" Plate Mill	Geared	1922	Illinois Steel Co.	South Chicago, Ill.	W
52	6500-4500	107-53	6600	25 cy.	60" 3 High Univ. Plate	Direct	1909	Illinois Steel Co.	Gary, Ind.	GE
53	7000	0-100	700	d.c.	60" Rev. Univ. Plate Mill	Direct	1919	Bethlehem Steel Co.	Sparrows Point, Md.	W
54	7000	81.7	6600	25 cy.	160" Plate Mill	Direct	1916	Illinois Steel Co.	Gary, Ind.	W

BLOOMING MILL DRIVES

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	500	190	230	d.c.	24" Blooming Mill	Geared	1910	Sharon Steel Hoop Co.	Sharon, Pa.	GE
2	850	710	2200	60 cy.	20" Blooming Mill	Geared	1923	Washburn Wire Co.	Phillipsdale, R. I.	W
3	1200	585	2200	60 cy.	24" Blooming Mill	Geared	1919	McConway Torley Co.	Pittsburgh, Pa.	W
4	1500	355	2200	60 cy.	35" Blooming Mill	Geared	1924	Timken Roller Bearing Co.	Canton, Ohio	W
5	1500	375	2200	25 cy.	36" 3 High Blooming Mill	Geared	1920	Atlas Crucible Steel Co.	Dunkirk, N. Y.	GE
6	2000	75	2200	25 cy.	Blooming Mill	Direct	1916	Wickwire Spencer Steel Co.	Buffalo, N. Y.	GE
7	2000	240	2200	60 cy.	32" Blooming Mill	Geared	1915	Mansfield Sheet & Tin Plate Co.	Mansfield, Ohio	GE
8	2100	47-120	700	d.c.	34" Rev. Blooming Mill	Direct	1916	Penn Seaboard Steel Corporation	New Castle, Del.	W
9	2200	70-150	600	d.c.	28" Rev. Blooming Mill	Direct	1920	Atlantic Steel Co.	Atlanta, Ga.	W
10	2900	47-120	700	d.c	34" Rev. Blooming Mill	Direct	1917	Sharon Steel Hoop Co.	Youngstown, Ohio	W
11	3250	40	500	d.c.	36" Blooming Mill	Direct	1916	American Rolling Mill Co.	Ashland, Ky.	GE
12	3250	40	500	d.c.	34" Blooming Mill	Direct	1916	Keystone Steel & Wire Co.	Peoria, Ill.	GE
13	3500	70-100	525	d.c.	32" Rev. Blooming Mill	Direct	1913	Steel Company of Canada	Hamilton, Ont.	W
14	3500	50- 75	700	d.c.	34" Rev. Blooming Mill	Direct	1914	Central Steel Co.	Massillon, Ohio	W
15	3500	50-120	700	d.c.	34" Blooming Mill	Direct	1925	Kokomo Steel & Wire Co.	Kokomo, Ind.	W
16	3500	50-120	700	d.c.	36" Blooming Mill	Direct	1925	Phoenix Iron Co.	Phoenixville, Pa.	W
17	3600	40- 90	600	d.c.	35" Rev. Blooming Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	W
18	3600	40- 90	600	d.c.	40" Rev. Blooming Mill	Direct	1918	Illinois Steel Co.	Gary, Ind.	W
19	4000	58-140	750	d.c.	34" Reversing Blooming	Direct	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
20	4000	0- 80	1200	d.c.	34" Blooming Mill	Coupled	1912	Algoma Steel Co.	Sault Ste. Marie,Can.	AC
21	5000	30-120	600	d.c.	40" Rev. Blooming Mill	Direct	1916	National Tube Co.	Lorain, Ohio	W
22	5000	50-120	600	d.c.	35" Rev. Blooming Mill	Direct	1915	United Alloy Steel Corporation	Canton, Ohio	W
23	5000	40-120	600	d.c.	35" Rev. Blooming Mill	Direct	1916	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
24	6500	40-120	600	d.c.	40" Rev. Blooming Mill	Direct	1915	Inland Steel Co.	Indiana Harbor, Ind.	W
25	6500	50	600	d.c.	36" Blooming Mill	Direct	1916	Trumbull Steel Co.	Warren, Ohio	GE
26	6500	50	600	d.c.	40" Blooming Mill	Direct	1916	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
27	6500	50	600	d.c.	40" Blooming Mill	Direct	1922	Otis Steel Co.	Cleveland, Ohio	GE
28	7000	40-120	700	d.c.	Blooming Mill	Coupled	1925	Illinois Steel Co.	South Chicago, Ill.	AC
29	7000	50-120	700	d.c.	40" Rev. Blooming Mill	Direct	1923	Bethlehem Steel Co.	Lackawanna, N. Y.	W
30	7000	50-120	700	d.c.	44" Blooming Mill	Direct	1924	Carnegie Steel Co.	Homestead, Pa.	W
31	7000	50-120	700	d.c.	40" Blooming Mill	Direct	1924	International Harvester Co., Wisconsin Steel	Chicago, Ill.	W
32	7000	50-120	700	d.c.	36" Rev. Rougher Mill	Direct	1925	Inland Steel Co.	Indiana Harbor, Ind.	W
33	7000	50-100	650	d.c.	46" Slabbing Mill	Direct	1925	Bethlehem Steel Co.	Sparrows Point, Md.	GE
34	7000	0-50-120	700	d.c.	40" Rev. Blooming Mill	Direct	1926	Forged Steel Wheel Co.	Butler, Pa.	W
35	7000	55	900	d.c.	45" Blooming Mill	Direct	1917	Tenn. Coal, Iron & R. R. Co.	Fairfield, Ala.	GE
36	8000	40-120	700	d.c.	54" Blooming Mill	Direct	1925	Carnegie Steel Co.	Homestead, Pa.	W
37	8000	240	13200	60 cy.	Interrupted Continuous Blooming Mill	Geared	1923	Ford Motor Co.	Detroit, Mich.	G-

SHEET AND TIN PLATE DRIVES

No.	Horse Power	R.P.M.	Voltage	Current	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	300	250	440	25 cy.	Sheet Mill	Geared	1910	Simonds Mfg. Co.	Lockport, N. Y.	GE
2	300	325–650	220	d.c.	Sheet Mill		1919	Aluminum Co. of America	New Kensington, Pa.	AC
3	300	505	2200	60	20" Sheet & Strip Jobbing Mill	Geared	1926	Indiana Rolling Mill Co.	New Castle, Ind.	W
4	300	505	2200	60	20" Sheet & Strip Jobbing Mill	Geared	1926	Indiana Rolling Mill Co.	New Castle, Ind.	W
5	350	320	2200	50 cy.	Sheet Mill	Geared	1917	Universal Steel Co.	Bridgeville, Pa.	W
6	350	400–600		d.c.	Hot Mill	Geared	1913	Bethlehem Steel Corp.	Lackawanna, N. Y.	CW
7	350	400–600		d.c.	Hot Mill	Geared	1913	Bethlehem Steel Corp.	Lackawanna, N. Y.	CW
8	400	360	2300	60	Sheet Mill, Cold Rolls	Geared	1925	Thomas Sheet Steel Co.	Niles, Ohio	GE
9	500	300	2200	60 cy.	Sheet Mill		1915	U. S. Aluminum Co.	New Kensington, Pa.	AC
10	500	300	2200	60 cy.	Sheet Mill		1915	U. S. A uminum Co.	New Kensington, Pa.	AC
11	500	300	2200	60 cy.	Sheet Mill		1915	U. S. Aluminum Co.	New Kensington, Pa.	AC
12	500	450	2200	60 cy.	Sheet Mill	Geared	1915	American Brass Co.	Torrington, Conn.	GE
13	500	600	2200	60	Continuous Sheet Mill	Geared	1926	American Rolling Mill Co.	Ashland, Ky.	W
14	600	300	2200	60 cy.	Sheet Mill	Geared	1917	Universal Rolling Mill Co.	Bridgeville, Pa.	AC
15	700	320	2200	60 cy.	Sheet and Jobbing Mill	Direct	1917	Carbon Steel Co.	Pittsburgh, Pa.	W
16	750	94	2200	25 cy.	Sheet Mill	Rope	1912	West Penn Steel Co.	Brackenridge, Pa.	GE
17	750	250	2200	60 cy.	Tin Mill	Geared	1914	Weirton Steel Co.	Weirton, W. Va.	W
18	800	214	2200	25 cy.	Sheet Mill	Geared	1919	Am. Sheet & Tin Plate Co.	Gary, Ind.	GE
19	800	214	2200	25 cy.	Sheet Mill	Geared	1919	Am. Sheet & Tin Plate Co.	Gary, Ind.	GE
20	800	600	2200	60	Hot & Cold Sheet Mill	Geared	1924	American Nickel Co.	Clearfield, Pa.	GE
21	900	94	2200	25 cy.	Jobbing Sheet Mill	Rope	1910	Am. Sheet & Tin Plate Co.	Gary, Ind.	GE
22	900	94	2200	25 cy.	Jobbing Sheet Mill	Rope	1910	Am. Sheet & Tin Plate Co.	Gary, Ind.	GE
23	1000	83	2200	25 cy.	Sheet Mill	Rope	1910	Follansbee Bros.	Follansbee, W. Va.	GE
24	1000	235	2200	60	Cold Rolled Tin Mill	Coupled	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	AC
25	1000	235	2200	60	Cold Rolled Tin Mill	Coupled	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	AC
26	1000	240	440	60 cy.	Sheet Mill	Geared	1918	Robertson Iron & Steel Co.	Springfield, Ohio	AC
27	1000	245	2200	25 cy.	30" Sheet Mill	Rope	1910	American Rolling Mill Co.	Middletown, Ohio	W
28	1000	250	6600	25 cy.	Sheet Mill	Geared	1919	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
29	1000	250	6600	25 cy.	Sheet Mill	Geared	1919	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
30	1000	250	6000	25 cy.	Tin Mill	Geared	1919	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
31	1000	250	6600	25 cy.	Tin Mill	Geared	1919	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
32	1000	250	2200	25 cy.	Sheet Mill	Geared	1920	Otis Steel Co.,	Cleveland, Ohio	AC
33	1000	250	2200	25 cy.	Sheet Mill	Geared	1920	Otis Steel Co.	Cleveland, Ohio	AC
34	1000	252	2200	60 cy.	Sheet Mill	Geared	1920	American Rolling Mill Co.	Zanesville, Ohio	W
35	1000	300	2200	60 cy.	Sheet Mill	Geared	1919	Superior Sheet Steel Co.	Canton, Ohio	GE
36	1000	300	2200	60 cy.	Sheet Mill	Geared	1919	Superior Sheet Steel Co.	Canton, Ohio	GE
37	1000	300	2200	60 cy.	Sheet Mill	Geared	1920	Milwaukee Rolling Mills Co.	Milwaukee, Wis.	GE
38	1000	300	2200	60 cy.	Sheet Mill	Geared	1920	Milwaukee Rolling Mills Co.	Milwaukee, Wis.	GE
39	1000	300	2200	60	Sheet Mill	Geared	1925	Sharon Steel Hoop Co.	Sharon, Pa.	CW
40	1000	300	2200	60	Sheet Mill	Geared	1925	Sharon Steel Hoop Co.	Sharon, Pa.	CW
41	1000	300	2200	60	Sheet Mill	Geared	1925	Sharon Steel Hoop Co.	Sharon, Pa.	CW
42	1000	600	2200	60	Sheet Mill	Geared	1925	American Nickel Corp.	Clearfield, Pa.	GE
43	1150	250	6600	25 cy.	Jobbing Sheet Mill	Geared	1913	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
44	1200	214	2200	25 cy.	Jobbing Sheet Mill	Geared	1913	Otis Steel Co.	Cleveland, Ohio	GE
45	1200	240	2200	60 cy.	Sheet Mill	Geared	1915	Empire Rolling Mills	Cleveland, Ohio	GE
46	1200	240	2200	60 cy.	Sheet Mill	Geared	1916	Mahoning Valley Steel Co.	Niles, Ohio	GE
47	1200	240	2200	60 cy.	Sheet Mill	Geared	1916	United Alloy Steel Corp.	Canton, Ohio	GE
48	1200	240	2200	60 cy.	Sheet Mill	Geared	1917	United Alloy Steel Corp.	Canton, Ohio	GE
49	1200	240	2200	60 cy.	Sheet Mill	Geared	1920	Republic Iron & Steel Co.	Youngstown, Ohio	GE
50	1200	240	2200	60 cy.	Sheet Mill	Geared	1920	Republic Iron & Steel Co.	Youngstown, Ohio	GE
51	1200	240	440	25 cy.	26" Sheet Mill	Rope	1907	Seneca Iron & Steel Co.	Buffalo, N. Y.	W
52	1200	240		60	Hot Sheet Mill	Coupled	1915	Standard Tin Plate Company	Canonsburg, Pa.	CW
53	1200	240		60	Hot Sheet Mill	Coupled	1915	Standard Tin Plate Company	Canonsburg, Pa.	CW
54	1200	240		60	Hot Sheet Mill	Coupled	1915	Standard Tin Plate Company	Canonsburg, Pa.	CW
55	1200	240		60	Hot Sheet Mill	Coupled	1916	Standard Tin Plate Company	Canonsburg, Pa.	CW
56	1200	240		60	Hot Sheet Mill	Coupled	1916	Standard Tin Plate Company	Canonsburg, Pa.	CW
57	1200	244	2200	25 cy.	Sheet Mill	Geared	1916	Bethlehem Steel Co.	Sparrows Pt., Md.	W
58	1200	244	2200	25 cy.	Sheet Mill	Geared	1916	Bethlehem Steel Co.	Sparrows Pt., Md.	W
59	1200	244	2200	25 cy.	Sheet Mill	Geared	1920	American Rolling Mill Co.	Middletown, Ohio	W
60	1200	244	2200	25 cy.	Sheet Mill	Geared	1920	American Rolling Mill Co.	Middletown, Ohio	W
61	1200	244	2200	25	Sheet Mill	Geared	1926	American Rolling Mills Co.	Middletown, Ohio	W
62	1200	244	2200	25	Sheet Mill	Geared	1926	American Rolling Mills Co.	Middletown, Ohio	W
63	1200	277	2200	60	Sheet Mill	Geared	1925	Wheeling Steel Corp.	Wheeling, W. Va.	GE
64	1200	295	6600	60 cy.	Sheet Mill	Coupled	1922	Weirton Steel Co.	Weirton, W. Va.	AC
65	1200	295	6600	60 cy.	Sheet Mill	Coupled	1922	Weirton Steel Co.	Weirton, W. Va.	AC
66	1200	300	4100	60 cy.	Sheet Mill	Geared	1920	Chapman Price Steel Co.	Indianapolis, Ind.	GE
67	1200	300	2200	60 cy.	Sheet Mill	Geared	1920	Central Steel Co.	Massillon, Ohio	GE
68	1200	300	2200	60 cy.	Sheet Mill	Geared	1920	Central Steel Co.	Massillon, Ohio	GE
69	1200	300	2200	60 cy.	Sheet Mill	Geared	1924	Thomas Sheet Steel Co.	Niles, Ohio	GE
70	1200	300	2200	60 cy.	Sheet Mill	Geared	1924	Thomas Sheet Steel Co.	Niles, Ohio	GE
71	1200	352	2200	60 cy.	Sheet Mill	Rope	1917	Mansfield Sheet & Tin Plate Co.	Mansfield, Ohio	W
72	1250	250	6600	25 cy.	Hot Tin Mill	Geared	1924	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
73	1250	250	6600	25 cy.	Hot Tin Mill	Geared	1924	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
74	1250	250	6600	25 cy.	Cold Tin Mill	Geared	1924	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
75	1250	250	6600	25	Hot Tin Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	GE
76	1250	250	6600	25	Hot Tin Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	GE
77	1250	250	6600	25	Cold Tin Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	GE
78	1250	250	6600	25	Sheet Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	GE
79	1400	240	2200	60 cy.	Sheet Mill	Geared	1912	Apollo Steel Co.	Apollo, Pa.	GE
80	1500	187	2200	25 cy.	Sheet Mill	Chain	1914	National Enamel & Stamp. Co.	Granite City, Ill.	AC
81	1500	210	2200	25 cy.	30" Sheet Mill	Rope	1910	American Rolling Mill Co.	Middletown, Ohio	W
82	1500	234	2200	60 cy.	Sheet Mill	Geared	1915	Canton Sheet Steel Co.	Canton, Ohio	W
83	1500	234	2200	60 cy.	Sheet Mill	Geared	1916	Mansfield Sheet & Tin Plate Co.	Mansfield, Ohio	W
84	1500	234	2200	60 cy.	Sheet Mill	Geared	1917	Liberty Steel Co.	Warren, Ohio	W
85	1500	234	2200	60 cy.	Sheet Mill	Geared	1919	Mansfield Sheet & Tin Plate Co.	Mansfield, Ohio	W
86	1500	240	2200	60 cy.	Sheet Mill	Geared	1922	United Alloy Steel Corp.	Canton, Ohio	GE
87	1500	240	2200	60 cy.	Sheet Mill	Geared	1919	Follensbee Bros.	Toronto, Ohio	AC
88	1500	240	2200	60 cy.	Sheet Mill	Geared	1919	Follensbee Bros.	Toronto, Ohio	AC
89	1500	240	2200	60 cy.	Sheet Mill	Geared	1920	Canton Sheet Steel Co.	Canton, Ohio	AC
90	1500	250	2200	25 cy.	Sheet Mill	Geared	1919	Eastern Rolling Mills Co.	Baltimore, Md.	GE
91	1500	250	2200	25 cy.	Sheet Mill	Geared	1919	Eastern Rolling Mills Co.	Baltimore, Md.	GE
92	1500	270	2200	60 cy.	Sheet Mill	Geared	1914	Youngstown Sheet & Tube Co.	Warren, Ohio	W
93	1500	295	2200	60 cy.	Sheet Mill	Geared	1924	Kansas City Bolt & Nut Co.	Kansas City, Mo.	AC
94	1500	300	4600	60 cy.	Sheet Mill	Geared	1922	Michigan Steel Corp.	Detroit, Mich.	GE
95	1500	300	4600	60 cy.	Sheet Mill	Geared	1924	Michigan Steel Corp.	Detroit, Mich.	GE
96	1500	360	4000	60 cy.	Sheet Mill	Geared	1923	Pacific Coast Steel Corp.	So.San Francisco,Cal.	GE
97	1500	360	2200	60 cy.	Sheet Mill	Geared	1923	Columbia Steel Co.	Pittsburgh, Cal.	GE
98	1600	94	2200	25 cy.	Sheet Mill	Rope	1910	American Sheet & Tin Plate Co.	Gary, Ind.	GE
99	1600	94	2200	25 cy.	Sheet Mill	Rope	1910	American Sheet & Tin Plate Co.	Gary, Ind.	GE
100	1600	94	2200	25 cy.	Sheet Mill	Rope	1913	American Sheet & Tin Plate Co.	Gary, Ind.	GE
101	1600	94	2200	25 cy.	Sheet Mill	Rope	1913	American Sheet & Tin Plate Co.	Gary, Ind.	GE
102	1600	94	2200	25 cy.	Tin Mill	Rope	1915	McKeesport Tin Plate Co.	McKeesport, Pa.	GE
103	1600	94	2200	25 cy.	Tin Mill	Rope	1915	McKeesport Tin Plate Co.	McKeesport, Pa.	GE
104	1600	94	2200	25 cy.	Tin Mill	Rope	1915	McKeesport Tin Plate Co.	McKeesport, Pa.	GE

SHEET AND TIN PLATE DRIVES—Continued

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd By
105	1600	94	2200	25 cy.	Tin Mill	Rope	1915	McKeesport Tin Plate Co.	McKeesport, Pa.	GE
106	1600	210	2200	25 cy.	Sheet Mill	Geared	1912	Inland Steel Co.	Indiana Harbor, Ind.	W
107	1600	240	2200	60 cy.	Sheet Mill	Geared	1919	Falcon Steel Co.	Niles, Ohio	GE
108	1600	250	440	25 cy.	Sheet Mill	Geared	1914	Seneca Iron & Steel Co.	Buffalo, N. Y.	GE
109	1600	270	2200	60 cy.	Sheet Mill	Geared	1916	Wheeling Steel Corporation	Wheeling, W Va.	W
110	1600	270	2200	60 cy.	Sheet Mill	Geared	1916	Wheeling Steel Corporation	Portsmouth, Ohio	W
111	1700	214	2200	25 cy.	Sheet Mill	Geared	1915	American Sheet & Tin Plate Co.	Gary, Ind.	GE
112	1700	214	2200	25 cy.	Tin Mill	Geared	1915	American Sheet & Tin Plate Co.	Gary, Ind.	GE
113	1700	214	2200	25 cy.	Tin Mill	Geared	1915	American Sheet & Tin Plate Co.	Gary, Ind.	GE
114	1700	214	2200	25 cy.	Tin Mill	Geared	1918	American Sheet & Tin Plate Co.	Gary, Ind.	GE
115	1700	214	2200	25 cy.	Tin Mill	Geared	1918	American Sheet & Tin Plate Co.	Gary, Ind.	GE
116	1700	214	2200	25 cy.	Tin Mill	Geared	1918	American Sheet & Tin Plate Co.	Gary, Ind.	GE
117	1700	214	2200	25 cy.	Tin Mill	Geared	1919	American Sheet & Tin Plate Co.	Gary, Ind.	GE
118	1700	250	440	25	Hot Sheet Mill	Geared	1925	Seneca Iron & Steel Co.	Buffalo, N. Y.	GE
119	1800	235	2200	60 cy.	Sheet Mill	Geared	1915	Trumbull Steel Co.	Warren, Ohio	W
120	1800	240	2200	60 cy.	Sheet Mill	Geared	1920	Apollo Steel Co.	Apollo, Pa.	GE
121	1800	253	2200	50	Eight Stand Tin Mill	Coupled	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	AC
122	1800	270	2200	60 cy.	Sheet Mill	Geared	1916	Andrews Steel Co.	Newport, Ky.	W
123	1800	270	2200	60 cy.	Sheet Mill	Geared	1916	Andrews Steel Co.	Newport, Ky.	W
124	1800	295	2200	60	32" Hot Roll Sheet Mill	Geared	1926	American Sheet & Tin Plate Co.	Monnessen, Pa.	AC
125	2000	230–460	600	d.c.	Sheet Mill	Geared	1926	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
126	2000	234	2200	60 cy.	Sheet Mill	Geared	1919	Newton Steel Co.	Newton Falls, Ohio	W
127	2000	235	2200	60 cy.	Tin Mill	Geared	1920	Nat. Enameling & Stamping Co.	St. Louis, Mo.	W
128	2000	234	2200	60 cy.	Sheet Mill	Geared	1921	Newton Steel Co.	Newton Falls, Ohio	W
126	2000	234	2200	60 cy.	Sheet Mill	Geared	1923	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
130	2000	240	2200	60 cy.	Sheet Mill	Geared	1919	Republic Iron & Steel Co.	Niles, Ohio	GE
131	2000	250	6600	25 cy.	Sheet Mill	Geared	1920	Youngstown Sheet & Tube Co.	Youngstown, Ohio	GE
132	2000	250	6600	25 cy.	Sheet Mill	Geared	1920	Youngstown Sheet & Tube Co.	Youngstown, Ohio	GE
133	2000	600	6600	60 cy.	Sheet Mill	Geared	1924	Tennessee Coal, Iron & R. R. Co.	Fairfield. Ala.	GE
134	2500	160–320	600	d.c.	Continuous Sheet Mill	Geared	1926	American Sheet & Tin Plate Co.	Gary, Ind.	W
135	2500	160–320	600	d.c.	Continuous Sheet Mill	Geared	1926	American Sheet & Tin Plate Co.	Gary, Ind.	W
136	2500	160–320	600	d.c.	Continuous Sheet Mill	Geared	1926	American Sheet & Tin Plate Co.	Gary, Ind.	W
137	2500	160–320	600	d.c.	Continuous Sheet Mill	Geared	1926	American Sheet & Tin Plate Co.	Gary, Ind.	W
138	2500	160–320	600	d.c.	Continuous Sheet Mill	Geared	1926	American Sheet & Tin Plate Co.	Gary, Ind.	W
139	2500	160–320	600	d.c.	Continuous Sheet Mill	Geared	1926	American Sheet & Tin Plate Co.	Gary, Ind.	W

ROD MILL DRIVES

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	300	375	2200	25	10" Rod Mill	Direct	1926	U. S. Aluminum Co.	Massena, N. Y.	GE
2	300	375	2200	25	10" Rod Mill	Direct	1926	U. S. Aluminum Co.	Massena, N. Y.	GE
3	300	575	2200	60 cy.	Rod Mill	Geared	1923	Standard Underground Cable Co.	Perth Amboy, N. J.	W
4	300	720	2200	60 cy.	Wire Rod Mill.	Geared	1917	Rome Wire Co.	Rome, N. Y.	AC
5	350	250	2200	25 cy.	10" Rod Mill	Direct	1911	Dillworth Porter Co.	Pittsburgh, Pa.	GE
6	360	300–425	230	d.c.	8" Rod Mill	Direct	1915	United Alloy Steel Corporation	Canton, Ohio	W
7	360	300–600	230	d.c.	Rod Mill	Direct	1922	United Alloy Steel Corporation	Canton, Ohio	W
8	360	350–500	230	d.c.	7" Rod Mill	Direct	1915	United Alloy Steel Corporation	Canton, Ohio	W
9	450	400–650	230	d.c.	Rod Mill	Direct	1913	American Steel & Wire Co.	Worcester, Mass.	W
10	600	440	2200	60 cy.	10" Rod Mill	Direct	1917	Wickwire Spencer Steel Corp.	Palmer, Mass.	W
11	600–400	514–300	2200	60	Rod Mill	Direct	1922	Northern Steel Co.	Medford, Mass.	GE
12	600–400	514–300	2200	60 cy.	Rod Mill	Direct	1912	Oliver Iron & Steel Co.	Pittsburgh, Pa.	GE
13	700	1200	6600	60	Wire Rod Mill		1925	Weirton Steel Co.	Weirton, W. Va.	AC
14	800	257	2200	60 cy.	12" Rod Mill	Belt	1915	Crucible Steel Co. of America	Harrison, N. J.	GE
15	800	535–750	600	d.c.	10" Wire Rod Mill	Geared	1926	American Steel & Wire Co.	Worcester, Mass.	W
16	800	535–750	600	d.c.	10" Wire Rod Mill	Geared	1926	American Steel & Wire Co.	Worcester, Mass.	W
17	800–363	706–320	600	d.c.	10" Rod Mill	Geared	1922	Wheeling Steel Corporation	Portsmouth, Ohio	GE
18	800–363	706–320	600	d.c.	10" Rod Mill	Geared	1922	Wheeling Steel Corporation	Portsmouth, Ohio	GE
19	800–363	706–320	600	d.c.	10" Rod Mill	Geared	1922	Wheeling Steel Corporation	Portsmouth, Ohio	GE
20	975–325	650–250	600	d.c.	Rod (Roughing) Mill	Geared	1922	Atlantic Steel Co.	Altanta, Ga.	W
21	975–510	865–450	600	d.c.	Rod (Finishing) Mill	Direct & Belted	1922	Atlantic Steel Co.	Atlanta, Ga.	W
22	1000	720	6600	60	Rod Mill	Geared	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
23	1000	720	6600	60	Rod Mill	Geared	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
24	1180–955–705	560–450–336	2200	60 cy.	Rod Mill	Belt	1916	Keystone Steel & Wire Co.	Peoria, Ill.	GE
25	1200	360	2200	60 cy.	Morgan Wr. Rod Mill	Geared	1918	Interstate Iron & Steel Co.	Chicago, Ill.	AC
26	1250	175–400	230	d.c.	Rod Mill	Direct	1915	United Alloy Steel Corporation	Canton, Ohio	W
27	1250–1000–650	650–500–325	2200	25 cy.	Rod Mill	Belt	1916	Wickwire Spencer Steel Co.	Buffalo, N. Y.	GE
28	1300	500	6400	25 cy.	Rod (Finishing) Mill	Rope	1910	American Steel & Wire Co.	Birmingham, Ala.	W
29	1500	150	6600	25 cy.	Wire Rod Mill	Coupled	1914	Illinois Steel Co.	Joliet, Ill.	AC
30	1500	234	2200	60 cy.	10" Rod Mill	Geared	1921	Columbia Steel Co.	Pittsburgh, Cal.	W
31	1500	270	2200	60 cy.	Lamberton Rod Mill	Geared	1915	United Alloy Steel Corporation	Canton, Ohio	W
32	1500	450	2200	60	9" Rod Mill	Direct	1926	Washburn Wire Co.	Philipsdale, R. I.	W
33	1500	450–550	600	d.c.	Rod Mill	Direct	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
34	1500	470–510	230	d.c.	Rod Mill	Direct	1923	John A. Roebling Sons	New York, N. Y.	W
35	1600	210–420	525	d.c.	Rod Mill	Geared	1913	Steel Company of Canada	Hamilton, Ont.	W
36	1600	210–420	525	d.c.	Rod Mill	Geared	1913	Steel Company of Canada	Hamilton, Ont.	W
37	1600	500	6600	25 cy.	Rod (Finishing) Mill	Rope	1910	American Steel & Wire Co.	Birmingham. Ala.	W
38	1800	514	2200	60 cy.	Rod Mill	Geared	1923	Columbia Steel Co.	Pittsburgh, Cal.	GE
39	1850	575–221	600	d.c.	Rod Mill	Direct & Belted	1922	Atlantic Steel Co.	Atlanta, Ga.	W
40	2360–1880–1440	410–327–250	2200	60 cy.	Rod Mill	Geared	1916	Keystone Steel & Wire Co.	Peoria, Ill.	GE
41	2400	500	6600	25 cy.	Wire Rod Mill	Geared	1916	Illinois Steel Co.	Gary, Ind.	AC
42	2470–1725–1235	430–300–215	2200	25 cy.	Rod Mill	Geared	1916	Wickwire Spencer Steel Co.	Buffalo, N. Y.	GE
43	2600	81.5	6600	25 cy.	Rod (Roughing) Mill	Geared	1910	American Steel & Wire Co.	Birmingham, Ala.	W
44	2600	368	6400	25 cy.	Rod Mill	Geared	1916	American Steel & Wire Co.	Cleveland, Ohio	W
45	2870–1435	400–200	600	d.c.	10" Rod Mill	Geared	1922	Wheeling Steel Corporation	Portsmouth, Ohio	GE
46	3000	150	6600	25 cy.	Wire Rod Mill	Coupled	1920	Minnesota Steel Co.	Steelton, Minn.	AC
47	3000	180–370	600	d.c.	10" Wire Rod Mill	Geared	1926	American Steel & Wire Co.	Worcester, Mass.	W
48	3000	450	6600	60	Rod Mills	Geared	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
49	3000	450	6600	60	Rod Mills	Geared	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
50	4000	375	6600	25	10" Cont. Wire Rod Mill	Geared	1925	Bethlehem Steel Co.	Sparrows Point, Md.	GE

PIERCING MILL DRIVES

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd By
1	300	300	2200	60	Piercing Mill	Coupled	1917	Pittsburgh Steel Products Co.	Monessen, Pa.	CW
2	300	300	2200	60	Piercing Mill	Coupled	1918	Pittsburgh Steel Products Co.	Allenport, Pa.	CW
3	400	600	440	60 cy.	Billet Piercing Machine	Geared	1915	Chase Metal Works	Waterbury, Conn.	GE
4	400	600	400	60 cy.	Piercing Mill	Geared	1915	Chase Metal Works	Waterbury, Conn.	GE
5	450	720	2200	60 cy.	Piercing Mill	Geared	1924	Standard Seamless Tube Co.	Economy, Pa.	GE
6	500	360	2200	60 cy.	Billet Piercing Mill	Geared	1922	Weldless Tube Co.	Wooster, Ohio	GE
7	500	500	2200	25	Continuous Tube Mill	Coupled	1915	Pittsburgh Steel Products Co.	Monessen, Pa.	CW
8	600	485	550	25 cy.	Piercing Mill	Geared	1915	Baltimore Tube Co.	Baltimore, Md.	W
9	650	225–400	600	d.c.	Piercing Mill	Geared	1925	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
10	650	225–400	600	d.c.	Piercing Mill	Geared	1925	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
11	650	225–400	600	d.c.	Piercing Mill	Geared	1925	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
12	700	150	2200	60 cy.	Piercing Mill	Rope	1916	Ohio Seamless Tube Co.	Shelby, Ohio	GE
13	750–750	235–325	230	d.c.	Piercing Mill	Geared	1914	Pittsburgh Seamless Tube Co.	Beaver Falls, Pa.	GE
14	750	353	2200	60 cy.	Piercing Mill	Direct	1915	National Tube Co.	Elwood City, Pa.	W
15	750	353	2200	60 cy.	Piercing Mill	Direct	1915	National Tube Co.	Elwood City, Pa.	W
16	750	353	2200	60 cy.	Piercing Mill	Direct	1915	National Tube Co.	Elwood City, Pa.	W
17	800	200–300	500	d.c.	Piercing Mill	Rope	1912	Pittsburgh Steel Products Co.	Monessen, Pa.	W
18	800	200–300	500	d.c.	Piercing Mill	Direct	1913	Pittsburgh Steel Products Co.	Monessen, Pa.	W
19	800	250	2200	60 cy.	Piercing Mill	Geared	1915	Timken Roller Bearing Co.	Canton, Ohio	W
20	1000	375	6600	25	Piercing Mill	Geared	1925	National Tube Co.	Lorain, Ohio	AC
21	1000	450	2200	60 cy.	Piercing Mill	Geared	1918	Winchester Rep. Arms Co.	New Haven, Conn.	AC
22	1200	200	2200	60 cy.	Piercing Mill	Rope	1919	Ohio Seamless Tube Co.	Shelby, Ohio	GE
23	1600	600	2200	60 cy.	Piercing Mill	Geared	1921	Standard Seamless Tube Co.	Pittsburgh, Pa.	GE
24	2500	247	6600	25 cy.	Piercing Mill	Geared	1923	Gary Tube Company	Gary, Ind.	W
25	2500	247	6600	25	Seamless Tube Mill	Geared	1925	Gary Tube Company	Gary, Ind.	W
26	2500	257	2200	60	Piercing Mill	Geared	1925	Globe Steel Tube Co.	Milwaukee, Wis.	AC
27	3000	40–100	600	d.c.	Piercing Mill	Direct	1925	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
28	3000	125–200	600	d.c.	Piercing Mill	Direct	1925	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
29	3500	600	2200	60	Piercing Mill	Geared	1925	Standard Seamless Tube Co.	Economy, Pa.	GE

TUBE ROLLING MILL DRIVES

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	300	300	230	d.c.	Steel Mill	Geared	1925	National Tube Co.	Lorain, Ohio	AC
2	300	300	230	d.c.	Steel Mill	Geared	1925	National Tube Co.	Lorain, Ohio	AC
3	300	300	230	d.c.	Steel Mill	Geared	1925	National Tube Co.	Lorain, Ohio	AC
4	300	345–500	500	d.c.	Tube Rolling Mill	Geared	1912	Pittsburgh Steel Products Co.	Monessen, Pa.	W
5	300	350	2200	60 cy.	Seamless Tube Co.	Geared	1915	Timken Roller Bearing Co.	Canton, Ohio	W
6	300	350	2200	60 cy.	Tube Rolling Mill	Geared	1919	Timken Roller Bearing Co.	Canton, Ohio	W
7	300	350–450	230	d.c.	Lap Welding Mill	Coupled	1923	Gary Tube Co.	Gary, Ind.	AC
8	300	435	230	d.c.	12″ Pipe Mill	Coupled	1910	A. M. Byers Company	Pittsburgh, Pa.	CW
9	300	435	230	d.c.	12″ Pipe Mill	Coupled	1910	A. M. Byers Company	Pittsburgh, Pa.	CW
10	300	450	220	30 cy.	Lap Welding Rolls	Geared	1923	Spang Chalfant Co.	Etna, Pa.	GE
11	300	450	2200	60 cy.	Cross Rolls in Tube Mill	Geared	1924	Standard Seamless Tube Co.	Economy, Pa.	GE
12	300	450	2200	60 cy.	Cross Rolls in Tube Mill	Geared	1924	Standard Tube Co. Seamless	Economy, Pa.	GE
13	300	500	220	25	Tube Mill	Geared	1915	Republic Iron & Steel Co.	Youngstown, Ohio	GE
14	300	500	550	25 cy.	Tube Rolling Mill	Geared	1917	Baltimore Tube Co.	Baltimore, Md.	W
15	300	500	550	25 cy.	Tube Rolling Mill	Geared	1917	Baltimore Tube Co.	Baltimore, Md.	W
16	300	500	230	d.c.	Pipe Mill—Wld. Rolls	Geared	1925	Central Tube Co.	Economy, Pa.	GE
17	300	514	220	60 cy.	Tube Mill	Geared	1914	Detroit Seamless Tube Co.	Detroit, Mich.	GE
18	300	514	440	60 cy.	Tube Mill	Geared	1914	Detroit Seamless Tobe Co.	Detroit, Mich.	GE
19	300	514	220	60 cy.	Tube Mill	Geared	1918	Detroit Seamless Tube Co.	Detroit, Mich.	AC
20	300	600	2200	60 cy.	Tube Mill	Geared	1922	Weldless Tube Co.	Wooster, Ohio	GE
21	300	600	2200	60 cy.	Tube Mill	Geared	1922	Weldless Tube Co.	Wooster, Ohio	GE
22	340	85	230	d.c.	Welding Rolls	Coupled	1906	National Tube Company	McKeesport, Pa.	CW
23	350–350	360–450	230	d.c.	Welding Rolls	Direct	1920	National Tube Co.	Lorain, Ohio	GE
24	350–350	360–450	230	d.c.	Welding Rolls	Direct	1920	National Tube Co.	Lorain, Ohio	GE
25	350	435	2200	60 cy.	Pipe Welding Roll Mill	Geared	1919	Wheeling Steel Corporation	Steubenville, Ohio	W
26	400	75	230	d.c.	Welding Rolls	Coupled	1906	National Tube Company	McKeesport, Pa.	CW
27	400	375	220	25 cy.	Tube Mill—Chill Rolls	Geared	1909	Youngstown Sheet & Tube Co.	Youngstown, Ohio	GE
28	400	375	220	25 cy.	20″ Tube Mill—Wld. Rolls	Geared	1909	Youngstown Sheet & Tube Co.	Youngstown, Ohio	GE
29	400	375	220	25 cy.	Tube Mill—Wld. Rolls	Geared	1917	Youngstown Sheet & Tube Co.	Youngstown, Ohio	GE
30	400	375	220	25 cy.	Tube Mill—Wld. Rolls	Geared	1922	Youngstown Sheet & Tube Co.	Youngstown, Ohio	GE
31	400	375	220	25 cy.	Tube Mill—Wld. Rolls	Geared	1922	Youngstown Sheet & Tube Co.	Youngstown, Ohio	GE
32	400	400	440	60 cy.	Lap Welding Rolls	Geared	1923	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE
33	400	400	440	60 cy.	Lap Welding Rolls	Geared	1923	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE
34	400	435	400	60 cy.	Pipe Mill	Geared	1918	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
35	400	600	440	60 cy.	Tube Mill	Geared	1920	Globe Seamless Tube Co.	Milwaukee, Wis.	AC
36	450	300	230	d.c.	10″ Tube Mill	Coupled	1911	Pittsburgh Seamless Tube Co.	Beaver Falls, Pa.	CW
37	500	234	2200	60	Tube Mill	Coupled	1922	Pittsburgh Steel Products Co.	Allenport, Pa.	CW
38	500	234	2200	60	Tube Mill	Coupled	1922	Pittsburgh Steel Products Co.	Allenport, Pa.	CW
39	500	250	2200	60	Tube Mill	Coupled	1918	Pittsburgh Steel Products Co.	Allenport, Pa.	CW
40	500	250	2200	60	Tube Mill	Coupled	1918	Pittsburgh Steel Products Co.	Allenport, Pa.	CW
41	500	300–450	230	d.c.	Lap Welding Mill	Coupled	1923	Gary Tube Co.	Gary, Ind.	AC
42	500	450	2200	60 cy.	Tube Mill	Geared	1916	Ohio Seamless Tube Co.	Shelby, Ohio	GE
43	500	450	2200	60 cy.	Tube Mill	Geared	1919	Ohio Seamless Tube Co.	Shelby, Ohio	GE
44	500	500	550	25 cy.	Tube Rolling Mill	Geared	1917	Baltimore Tube Co.	Baltimore, Md.	W
45	500	600	2200	60	Reducing Pipe Mill	Geared	1925	Ohio Seamless Tube Co.	Shelby, Ohio	GE
46	500	600	4600	60	Reducing Mill	Geared	1926	Detroit Seamless Steel Tube Co.	Detroit, Mich.	AC
47	600	300		60	Tube Mill	Coupled	1917	Pittsburgh Steel Products Co.	Monessen, Pa.	CW
48	600	300		60	Tube Mill	Coupled	1918	Pittsburgh Steel Products Co.	Allenport, Pa.	CW
49	600	360	2200	60 cy.	Tube Mill	Geared	1914	Standard Seamless Tube Co.	Economy, Pa.	GE
50	700	300–400	230	d.c.	Lap Welding Mill	Coupled	1923	Gary Tube Co.	Gary, Ind.	AC
51	750	295	6600	25 cy.	Seamless Mill	Geared	1923	Gary Tube Co.	Gary, Ind.	W
52	750	353	2200	60 cy.	Tube Rolling Mill	Direct	1915	National Tube Co.	Ellwood City, Pa.	W
53	750	353	2200	60 cy.	Tube Rolling Mill	Direct	1915	National Tube Co.	Ellwood City, Pa.	W
54	750	353	2200	60 cy.	Tube Rolling Mill	Direct	1915	National Tube Co.	Ellwood City, Pa.	W
55	800	107	6600	25	Tube Rolling Mill	Coupled	1925	National Tube Co.	Lorain, Ohio	AC
56	800	109	2200	60 cy.	2—21″ Rolls	Coupled	1924	Globe Steel Tube Co.	Milwaukee, Wis.	AC
57	800	225	2200	60 cy.	Roughing Mill Tube	Geared	1916	Standard Seamless Tube Co.	Economy, Pa.	GE
58	1000	240	220	50 cy.	Tube Mill	Geared	1919	Globe Seamless Tube Co.	Milwaukee, Wis.	AC
59	1000	240		60	Tube Mill	Rope & Direct	1917	Pittsburgh Seamless Tube Co.	Beaver Falls, Pa.	CW
60	1000	300–400	230	d.c.	Lap Welding Mill	Coupled Rope	1923	Gary Tube Co.	Gary, Ind.	AC
61	1200	257	4600	60 cy.	Tube Mill	Direct & Coupled	1918	Detroit Seamless Tube Co.	Detroit, Mich.	GE
62	1200	294	2200	50 cy.	Tube Rolling Mill	Geared	1915	National Tube Co.	Ellwood City, Pa.	W
63	1500	62–½	6600	25	Tube Rolling Mill	Coupled	1926	Gary Tube Co.	Gary, Indiana	AC
64	1600	600	2200	60	Tube Rolling Mill	Geared	1925	Standard Seamless Tube Co.	Economy, Pa.	GE
65	1800	250	2200	50 cy.	Tube Rolling Mill	Direct	1915	National Tube Co.	Ellwood City, Pa.	W

STRIP AND HOOP MILL DRIVES

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	300-225-165	335-225-165	6600	25 cy.	12" Hot Strip Mill	Geared	1920	Illinois Steel Co.	Gary, Ind.	GE
2	300	360		60	10" Strip Mill	Coupled	1923	Pittsburgh Steel Company	Glassport, Pa.	CW
3	300	600	2200	60 cy.	10" Hot Strip Mill	Direct	1919	Superior Steel Co.	Carnegie, Pa.	GE
4	350	242	2200	25 cy.	Cold Strip Mill	Geared	1922	Otis Steel Co.	Cleveland, Ohio	W
5	350	345	440	60 cy.	21" Plate (Cold Roll.) Mill	Geared	1910	Oliver Iron & Steel Co.	Wilson Station, Pa.	W
6	350	450-600	230	d.c.	Band Mill	Direct	1926	Sharon Steel Hoop Co.	Sharon, Pa.	CW
7	350	490	6400	25 cy.	24" Flat (Edging) Mill	Geared	1916	American Steel & Wire Co.	Cleveland, Ohio	W
8	400-400	275-500	550	d.c.	12" Hot Strip Mill	Direct	1916	American Steel & Wire Co.	Cleveland, Ohio	GE
9	400	360		60	8" Strip Mill	Coupled	1923	Pittsburgh Steel Company	Glassport, Pa.	CW
10	450	440-350	2200	60 cy.	Cont. Hoop (Fin.) Mill	Direct	1920	Connors Steel Co.	Birmingham, Ala.	W
11	450	450-600	230	d.c.	12" Cold Strip (2 Tandem Stds. Roughing) Mill	Geared	1915	Superior Steel Co..	Carnegie, Pa.	W
12	450	450-600	230	d.c.	12" Cold Strip (2 Tandem Stds. Finishing) Mill	Geared	1915	Superior Steel Co.	Carnegie, Pa.	W
13	450	700-595	2200	60 cy.	Cont. Hoop (Fin.) Mill	Direct	1920	Connors Steel Co.	Birmingham, Ala.	W
14	450	730	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
15	450	730	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
16	500-500	250-325	230	d.c.	8" Hoop Mill	Direct	1909	Atlantic Steel Co.	Atlanta, Ga.	GE
17	500	250-500	230	d.c.	9" Hoop (Finishing) Mill	Direct	1914	Sharon Steel Hoop Co.	Sharon, Pa.	W
18	500-500	400-600	230	d.c.	Hoop Mill	Geared	1920	Atlantic Steel Co.	Atlanta, Ga.	GE
19	500	450		60	Hoop Mill	Geared	1912	Carnegie Steel Company	Pittsburgh, Pa.	CW
20	550	320-206	2200	60 cy.	10" Hoop Mill	Direct	1917	Atlantic Steel Co.	Atlanta, Ga.	W
21	600-600	150-250	575	d.c.	6" Hot Strip Mill	Direct	1913	American Steel & Wire Co.	Cleveland, Ohio	GE
22	600	185-470	600	d.c.	10" Strip Mill	Direct	1926	LacLede Steel Co.	Alton, Ill.	W
23	600-600	225-425	550	d.c.	12" Hot Strip Mill	Direct	1916	American Steel & Wire Co.	Cleveland, Ohio	GE
24	600	270-635	600	d.c.	10" Strip Mill	Direct	1926	LacLede Steel Co.	Alton, Ill.	W
25	600	390	440	60 cy.	Cold Strip Mill	Geared	1917	Stanley Works	New Haven, Conn.	W
26	600-600	720-360	6600	60 cy.	Hot Strip Mill	Geared	1916	Weirton Steel Co.	Weirton, W. Va.	AC
27	700	490	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
28	700	490	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
29	700	875	2200	60 cy.	Cont. Hoop (Rough.) Mill	Geared	1920	Connors Steel Co.	Birmingham, Ala.	W
30	700	875	2200	60 cy.	Cont. Hoop (Inter.) Mill	Geared	1920	Connors Steel Co.	Birmingham, Ala.	W
31	720	395-825	600	d.c.	10" Strip Mill	Direct	1926	LacLede Steel Co.	Alton, Ill.	W
32	720	480-1000	600	d.c.	10" Strip Mill	Direct	1926	LacLede Steel Co.	Alton, Ill.	W
33	750	257		60	10" Strilp Mill	Coupled	1923	Pittsburgh Steel Company	Glassport, Pa.	CW
34	750-625-460	360-300-220	6600	25 cy.	12" Hot Strip Mill	Direct	1920	Illinois Steel Co.	Gary, Ind.	GE
35	750-750	360-860	600	d.c.	14" Cont. Mill	Geared	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
36	750-600-400	473-375-278	6600	25 cy.	12" Hot Strip Mill	Direct	1920	Illinois Steel Co.	Gary, Ind.	GE
37	770-700-630	540-490-440	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
38	800-800	200-400	600	d.c.	14" Hot Strip Mill	Direct	1920	Trumbull Steel Co.	Warren, Ohio	GE
39	800-800	214-167	6600	25 cy.	16" Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
40	800-800	231-462	600	d.c.	14" Hot Strip Mill	Direct	1920	Trumbull Steel Co.	Warren, Ohio	GE
41	800	250-500	230	d.c.	14" and 9" Hoop Mill	Direct	1914	Sharon Steel Hoop Co.	Sharon, Pa.	W
42	800-800	256-512	600	d.c.	14" Hot Strip Mill	Direct	1920	Trumbull Steel Co.	Warren, Ohio	GE
43	800	257	2200	60	Hot Strip Mill	Geared	1926	Standard Seamless Tube Co.	Economy, Pa.	GE
44	800-800	275-550	600	d.c.	14" Hot Strip Mill	Direct	1920	Trumbull Steel Co.	Warren, Ohio	GE
45	800-800	315-210	575	d.c.	6" Hot Strip Mill	Direct	1907	American Steel & Wire Co.	Cleveland, Ohio	GE
46	800	350-600	230	d.c.	Band Mill	Direct	1926	Sharon Steel Hoop Co.	Sharon, Pa.	CW
47	800	350-600	230	d.c.	Band Mill	Direct	1926	Sharon Steel Hoop Co.	Sharon, Pa.	CW
48	800-800	390-260	575	d.c.	6" Hot Strip Mill	Direct	1907	American Steel & Wire Co.	Cleveland, Ohio	GE
49	800	435	2200	60	No. 2 Hoop Mill	Geared	1925	Connors Steel Co.	Birmingham, Ala.	W
50	800	505	2200	60	9" Hot Strip Mill	Direct	1926	West Leechburg Steel Co.	West Leechburg, Pa.	W
51	800	585-292	6600	60 cy.	16" Hoop and Band Mill	Geared	1915	Weirton Steel Co.	Weirton, W. Va.	W
52	890-800-800	720-600-480	2200	60 cy.	12" Hot Strip Mill	Geared	1920	Canadian Electric Steel Co.	Montreal, Canada	GE
53	900-710-620	325-257-182	2300	60 cy.	10" Hoop Mill	Geared	1918	Acme Steel Goods Co.	Riverdale, Ill.	GE
54	1000	50-100	600	d.c.	24" Flat (Rough.) Mill	Direct	1916	American Steel & Wire Co.	Cleveland, Ohio	W
55	1000	214-150	6400	25 cy.	24" Flat (Finishing) Mill	Direct	1916	American Steel & Wire Co.	Cleveland, Ohio	W
56	1000	277	2200	60	Strip Mill	Geared	1919	American Tube & Stamping Co.	Bridgeport, Conn.	GE
57	1000	435	2200	60	Hot Strip Mill	Geared	1924	American Tube & Stamping Co.	Bridgeport, Conn.	W
58	1000	435	2200	60	Hot Strip Mill	Geared	1924	American Tube & Stamping Co.	Bridgeport, Conn.	W
59	1000	705	2200	60 cy.	16" Strip Mill	Geared	1920	Central Steel Co.	Massillon, Ohio	W
60	1125-900-675	312-250-187	6600	25	12" Strip Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	GE
61	1200	200-400	230	d.c.	14" Band Hoop Mill	Direct	1926	Sharon Steel Hoop Co.	Sharon, Pa.	W
62	1200	200-400	230	d.c.	14" Band Hoop Mill	Direct	1926	Sharon Steel Hoop Co.	Sharon, Pa.	W
63	1200-1200-1200	450-360-270	2300	60 cy.	9" Hot Strip Mill	Geared	1916	Trumbull Steel Co.	Warren, Ohio	GE
64	1200-1200-1200	450-360-270	2300	60 cy.	9" Hot Strip Mill	Geared	1916	Trumbull Steel Co.	Warren, Ohio	GE
65	1200-1200-1200	450-360-270	2300	60 cy.	9" Hot Strip Mill	Direct	1916	Trumbull Steel Co.	Warren, Ohio	GE
66	1200-1000-800	450-375-300	6600	25 cy.	8" Hoop Mill, No. 8	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
67	1200-1000-800	450-375-300	6600	25 cy.	8" Hoop Mill, No. 9	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
68	1200-1000-800	450-375-300	6600	25 cy.	18" Band Mill, No. 13	Geared	1919	Carnegie Steel Co.	Youngstown, Ohio	GE
69	1200	505-303	6600	60 cy.	16" Band Mill	Geared	1919	Weirton Stee Co.	Weirton, W. Va.	W
70	1200	590-450	2200	60 cy.	Duo and Bull Head Mill	Geared	1916	Central Steel Co.	Massillon, Ohio	W
71	1200	590	2200	60 cy.	22" Strip Mill	Geared	1918	Harrisburg Pipe & Pipe Bending Co.	Harrisburg, Pa.	W
72	1250-1250	175-350	600	d.c.	14" Hot Strip Mill	Geared	1920	Trumbull Steel Co.	Warren, Ohio	GE
73	1250-1250	175-350	600	d.c.	14" Hot Strip Mill	Geared	1920	Trumbull Steel Co.	Warren, Ohio	GE
74	1400	450-550	500	d.c.	12" Spring Mill	Coupled	1926	Ford Motor Co., Fordson Plant	Detroit, Mich.	AC
75	1500	125-250	230	d.c.	14" Band Mill	Direct	1914	Sharon Steel Hoop Co.	Sharon, Pa.	W
76	1500	125-250	240	d.c.	Strip Mill	Geared	1922	West Leechburg Steel Co.	Leechburg, Pa.	W
77	1500	125-250	240	d.c.	Strip Mill	Geared	1922	West Leechburg Steel Co.	Leechburg, Pa.	W
78	1500	198-100	600	d.c.	10" Strip Mill	Rope & Direct	1926	LacLede Steel Co.	Alton, Ill.	W
79	1500	200	6600	60	Strip Sheet Mill	Geared	1926	Weirton Steel Co.	Weirton, W. Va.	GE
80	1500	200-400	600	d.c.	20"-16" Hot Strip Mill	Geared	1925	Acme Steel Goods Co.	Riverdale, Ill.	W
81	1500	257	2200	25 cy.	10" Hot Strip Mill	Direct	1919	Superior Steel Co.	Carnegie, Pa.	GE
82	1500-1500	280-420	600	d.c.	20" Hot Strip Mill	Direct	1922	Otis Steel Co.	Cleveland, Ohio	GE
83	1500-1500	280-420	600	d.c.	20" Hot Strip Mill	Direct	1922	Otis Steel Co.	Cleveland, Ohio	GE
84	1500-1500	280-420	600	d.c.	20" Hot Strip Mill	Direct	1922	Otis Steel Co.	Cleveland, Ohio	GE
85	1500	360	2200	60 cy.	10" Hot Strip Mill	Direct	1919	Superior Steel Co.	Carnegie, Pa.	GE
86	1500	450	6600	60	Strip Sheet Mill	Geared	1926	Weirton Steel Co.	Weirton, W. Va.	GE
87	1500	450	6600	60	Strip Sheet Mill	Geared	1926	Weirton Steel Co.	Weirton, W. Va.	GE
88	1500-1500-1200	450-360-270	2300	60 cy.	16" Strip Mill	Geared	1916	Trumbull Steel Co.	Warren, Ohio	GE
89	1500-1200-900	468-375-281	6600	25	12" Strip Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	GE
90	1500	505	6600	60 cy.	16" Hoop and Band Mill	Geared	1915	Weirton Steel Co.	Weirton, W. Va.	W
91	1500	514	6600	60 cy.	Hot Strip Mill	Geared	1917	Weirton Steel Co.	Weirton, W. Va.	AC
92	1500-1500	514-237	6600	60 cy.	Hot Strip Mill	Geared	1917	Weirton Steel Co.	Weirton, W. Va.	AC
93	1500	514	6600	60 cy.	Hot Strip Mill	Geared	1924	Weirton Steel Co.	Weirton, W. Va.	AC
94	1500-1500	514-237	6600	60 cy.	Hot Strip Mill	Geared	1917	Weirton Steel Co.	Weirton, W. Va.	AC
95	1500	705	2200	60 cy.	Strip Mill	Geared	1922	West Leechburg Steel Co.	Leechburg, Pa.	W
96	1500	705	2200	60 cy.	Strip Mill	Geared	1922	West Leechburg Steel Co.	Leechburg, Pa.	W
97	1500	705	2200	60	20"-16" Hot Strip Mill	Geared	1925	Acme Steel Goods Co.	Riverdale, Ill.	W
98	1600	440-500-540	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
99	1600	440-500-540	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
100	1600	490	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
101	1600	705	2200	60	9" Hot Strip Mill	Geared	1926	West Leechburg Steel Co.	West Leechburg, Pa.	W
102	1650-1205	235-187.5-	6600	25 cy.	20" Hot Strip Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
103	1700-1700	90-140	600	d.c.	14" Continuous Mill	Direct	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE

STRIP AND HOOP MILL DRIVES—Continued

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
104	1700-1700	90-205	600	d.c.	14" Continuous Mill	Direct	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
105	1750	100-200	500	d.c.	12" Spring Strip Mill	Coupled	1926	Ford Motor Co., Fordson Plant	Detroit, Mich.	AC
106	1800-1800	115-230	600	d.c.	20" Hot Strip Mill	Direct	1922	Otis Steel Co.	Cleveland, Ohio	GE
107	1800-1800	115-230	600	d.c.	20" Hot Strip Mill	Direct	1922	Otis Steel Co.	Cleveland, Ohio	GE
108	1800-1800	115-230	600	d.c.	20" Hot Strip Mill	Direct	1922	Otis Steel Co.	Cleveland, Ohio	GE
109	1800	125-250	600	d.c.	20"-16" Hot Strip Mill	Direct	1925	Acme Steel Goods Co.	Riverdale, Ill.	W
110	1800	125-250	600	d.c.	20"-16" Hot Strip Mill	Direct	1925	Acme Steel Goods Co.	Riverdale, Ill.	W
111	1800	165-350	240	d.c.	Strip Mill	Direct	1922	West Leechburg Steel Co.	Leechburg, Pa.	W
112	1800	165-350	240	d.c.	Strip Mill	Direct	1922	West Leechburg Steel Co.	Leechburg, Pa.	W
113	1800	185-370	600	d.c.	20"-16" Hot Strip Mill	Geared	1925	Acme Steel Goods Co.	Riverdale, Ill.	W
114	1800	185-370	600	d.c.	20"-16" Hot Strip Mill	Direct	1925	Acme Steel Goods Co.	Riverdale, Ill.	W
115	1800	185-370	600	d.c.	20"-16" Hot Strip Mill	Direct	1925	Acme Steel Goods Co.	Riverdale, Ill.	W
116	1800	214	2200	25 cy.	6" Hot Strip Mill	Rope	1907	American Steel & Wire Co.	Cleveland, Ohio	GE
117	1800-1500-1200	240-200-160	2300	60 cy.	10" Hoop Mill	Belt	1918	Acme Steel Goods Co.	Riverdale, Ill.	GE
118	1800-1500-1200	450-375-300	6600	25 cy.	10" Hoop Mill, No. 11	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
119	1800	500	6600	25 cy.	20" Hot Strip Mill	Geared	1922	Otis Steel Co	Cleveland, Ohio	GE
120	2000	200-400	600	d.c.	Hot Strip Mill	Geared	1926	Columbia Steel Co.	Butler, Pa.	GE
121	2000	200-400	600	d.c.	Hot Strip Mill	Geared	1926	Columbia Steel Co.	Butler, Pa.	GE
122	2000	200-400	600	d.c.	Hot Strip Mill	Geared	1926	Columbia Steel Co.	Butler, Pa.	GE
123	2000	200-400	600	d.c.	Hot Strip Mill	Geared	1926	Columbia Steel Co.	Butler, Pa.	GE
124	2000	200-400	600	d.c.	Strip Sheet Mill	Direct	1926	Weirton Steel Co.	Weirton, W. Va.	GE
125	2000	200-400	600	d.c.	Strip Sheet Mill	Direct	1926	Weirton Steel Co.	Weirton, W. Va.	GE
126	2000-1700	210-680	600	d.c.	14" Continuous Mill	Direct	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
127	2000-2000-1600	450-360-270	2200	60 cy.	16" Hot Strip Mill	Geared	1920	Trumbull Steel Co.	Warren, Ohio	GE
128	2000-2000-1600	450-360-270	2200	60 cy.	16" Hot Strip Mill	Geared	1920	Trumbull Steel Co.	Warren, Ohio	GE
129	2000-2000-1600	450-360-270	2200	60 cy.	16" Hot Strip Mill	Geared	1920	Trumbull Steel Co.	Warren, Ohio	GE
130	2000-1600-1200	625-500-375	6600	25	12" Strip Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	GE
131	2000-1600-1200	625-500-375	6600	25	14" Bar Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	GE
132	2100-2100	150-310	600	d.c.	14" Cont. Strip Mill	Direct	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
133	2100-1600	150-460	600	d.c.	14" Cont. Strip Mill	Direct	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
134	2200-2000-1800	275-250-225	6600	25	18" Band Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	GE
135	2500	187.5	6600	25	18" Band Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	GE
136	2500	187.5	6600	25	18" Band Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	GE
137	2500	200-400	600	d.c.	Strip Sheet Mill	Direct	1926	Weirton Steel Co.	Weirton, W. Va.	GE
138	2500	200-400	600	d.c.	Strip Sheet Mill	Direct	1926	Weirton Steel Co.	Weirton, W. Va.	GE
139	2500	200-400	600	d.c.	Strip Sheet Mill	Direct	1926	Weirton Steel Co.	Weirton, W. Va.	GE
140	2500	352-176	6600	60 cy.	16" Hoop and Band Mill	Geared	1915	Weirton Steel Co.	Weirton, W. Va.	W
141	2750-2240-1750	262-214-167	6600	25 cy.	12" Hot Strip Mill	Direct	1920	Illinois Steel Co.	Gary, Ind.	GE
142	3000	125	6400	25 cy.	20" Flat Mill	Coupled	1916	American Steel & Wire Co.	Cleveland, Ohio	AC
143	3000-3000	200-360	600	d.c.	14" Continuous Mill	Geared	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
144	3000-2500-2000	300-250-200	6600	25 cy.	18" Band Mill, No. 13	Direct	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
145	3000-2500-2000	300-250-200	6600	25 cy.	12" Hoop Mill, No. 13	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
146	5000	70-150	900	d.c.	27" Rev. Hot Strip Mill	Direct	1926	Columbia Steel Co.	Butler, Pa.	GE
147	5000-4000-3000	450-360-270	2200	60	16" Hot Strip Mill	Geared	1925	Trumbull Steel Co.	Warren, Ohio	GE
148	5500-4400-3400	170-136-105	6600	25 cy.	20" Hot Strip Mill	Direct	1920	Illinois Steel Co.	Gary, Ind.	GE

MULTI-SPEED DRIVES

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	300-300-150	600-400-300	440		Bar Mill	Chain	1916	Vulcan Crucible Steel Co.	Aliquippa, Pa.	GE
2	350-350	150-100	6600		12" Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
3	350-350	375-214	6600		9" Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
4	400-225	600-300	550		Bar Mill	Geared	1909	Ludlum Steel Co.	Watervliet, N. Y.	GE
5	400-265	875-585	2200	60 cy.	Bar Mill	Geared	1913	Old Dominion Iron & Nail Co.	Richmond, Va.	W
6	450-360	870-695	2200	60 cy.	10" Merchant Mill	Geared	1918	Cleveland Hardware Co.	Cleveland, Ohio	W
7	450-360	875-700	2200	60 cy.	9" Merchant Mill	Geared	1915	National Lock Washer Co.	Riverside, N. J.	W
8	475-350	240-181	440	25 cy.	10" Merchant Mill	Direct	1914	Kansas City Bolt & Nut Co.	Kansas City, Mo.	W
9	485-360	870-695	2200	60 cy.	10" Merchant Mill	Geared	1915	Old Dominion Iron & Nail Co.	Richmond, Va.	W
10	500	730-485	2200	50 cy.	8" Merchant Mill	Geared	1919	Southern Calif. Iron & Steel Co.	Los Angeles, Cal.	W
11	500-250	750-375	3000		Merchant Mill	Geared	1923	Consolidated Rolling Mills	Mexico City, Mex.	GE
12	500-400	775-585	550	40 cy.	10" Merchant Mill	Geared	1917	Cohoes Rolling Mill Co.	Cohoes, N. Y.	W
13	500-400	875-700	550	60 cy.	10"-14" Merchant Mill	Geared	1916	The Texas Steel Co.	Fort Worth, Texas	W
14	550-360	875-585	2200	60 cy.	12" Merchant Mill	Geared	1917	Norfolk & Western Railroad	Roanoke, Va.	W
15	575-575	375-250	6600		8" Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
16	575-575	300-214	6600		10" Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
17	600-600	214-93	6600		12" Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
18	600-400	514-300	2200	60	Rod Mill	Direct	1912	Northern Steel Co.	Medford, Mass.	GE
19	600-300	600-300	550	60	9" Bar Mill No. 2	Geared	1926	Ludlum Steel Co.	Watervliet, N. Y.	GE
20	800-800	214-167	6600		16" Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
21	800-400	450-225	2200	60	Copper Mill	Direct	1925	Anaconda Copper Mining Co.	Mont.	GE
22	800-400	600-300	550		Bar Mill	Geared	1917	Ludlum Steel Co.	Watervliet, N. Y.	GE
23	800-363	706-320	600		10" Rod Mill	Geared	1922	Wheeling Steel Corp.	Portsmouth, Ohio	GE
24	800	730-485	2200	50 cy.	12" Merchant Mill	Geared	1919	Southern Calif. Iron & Steel Co.	Los Angeles, Cal.	W
25	800-800	900-720	2200		9" Merchant Mill	Geared	1923	Knoxville Iron Co.	Knoxville, Tenn.	GE
26	800-800	900-720	2200		9" Merchant Mill	Geared	1923	Knoxville Iron Co.	Knoxville, Tenn.	GE
27	800	875-700	2200	60 cy.	16" Merchant Mill	Geared	1920	Kansas City Bolt & Nut Co.	Kansas City, Mo.	W
28	850-850	214-187	6600		10" Merchant Mill	Rope	1916	Illinois Steel Co.	Gary, Ind.	GE
29	850-850	214-187	6600		10" Merchant Mill	Rope	1916	Illinois Steel Co.	Gary, Ind.	GE
30	900-900	214-150	2200		12" Merchant Mill	Direct	1910	Algoma Steel Co.	Saulte Ste. Marie, Can.	GE
31	1000-400	257-128	550	60	9" Bar Mill No. 1	Geared	1926	Ludlum Steel Co.	Watervliet, N. Y.	GE
32	1100-1500	91	2200	25 cy.	84" Plate (Fin.) Mill	Direct	1910	American Sheet & Tin Plate Co.	Gary, Ind.	W
33	1300-1300	214-187	6600		10" Merchant Mill	Geared	1916	Illinois Steel Co.	Gary, Ind.	GE
34	1800-1800	250-125	6600		22" Merchant Mill	Geared	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
35	2000	163-113	6600	25 cy.	10" Merchant Mill	Direct	1909	Illinois Steel Co.	Gary, Ind.	W
36	2500	113-91	6600	25 cy.	12" Merchant Mill	Geared	1909	Illinois Steel Co.	Gary, Ind.	W
37	6500-4500	107-53	6600		60" 3-High Univ. plate Mill	Direct	1909	Illinois Steel Co.	Gary, Ind.	GE

MERCHANT MILL DRIVES

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	300	175–225	600	d.c.	10″ Merchant Mill	Direct	1926	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
2	300–300	187.5–112.5	2200	25 cy.	12″ Merchant Mill	Direct	1914	Bethlehem Stee Co.	Lebanon, Pa.	GE
3	300–300	187.5–112 5	2200	25 cy.	12″ Merchant Mill	Direct	1914	Bethlehem Steel Co.	Lebanon, Pa.	GE
4	300	257	2200	50	Merchant Mill		1917	Tennessee Coal, Iron & R. R. Co.	Bessemer, Ala.	CW
5	300	267–800	230	d.c.	Hot Merchant Mill	Geared	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
6	300	267–800	230	d.c.	Hot Merchant Mill	Geared	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
7	300	267–800	230	d.c.	Hot Merchant Mill	Geared	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
8	300–300	300–180	2200	25 cy.	10″ Merchant Mill	Direct	1914	Bethlehem Steel Co.	Lebanon, Pa.	GE
9	300	300	2200	60	Merchant Mill		1917	Tennessee Coal, Iron & R. R. Co.	Bessemer, Ala.	CW
10	300–300	315–630	230	d.c.	8″ Merchant Milli	Direct	1919	Donner Steel Co.	Buffalo, N. Y.	GE
11	300	350–500	230	d.c.	Merchant Mill	Coupled	1915	Buffalo Bolt Company	N. Tonawanda, N. Y.	CW
12	300	365	2200	25 cy.	8″ Merchant Mill	Direct	1909	Bethlehem Steel Co.	Johnstown, Pa.	W
13	300	440	2200	60 cy.	Merch. (Roughing) Mill	Coupled	1923	Ft. Wayne Rolling Mill Co.	Ft. Wayne, Ind.	AC
14	300	450	2200	60 cy.	8″ Merchant Mill		1917	Llewellyn Iron Works	Los Angeles, Cal.	GE
15	300–300	500–300	2200	25 cy.	9″ Merchant Mill	Direct	1914	Bethlehem Steel Co.	Lebanon, Pa.	GE
16	300–300	500–300	2200	25 cy.	8″ Merchant Mill	Direct	1914	Bethlehem Steel Co.	Lebanon, Pa.	GE
17	300	500	2080	25 cy.	9″ Merchant Mill	Geared	1916	Halcomb Steel Co.	Syracuse, N. Y.	GE
18	300–150	590–292	2200	60 cy.	9″ Merchant (Fin.) Mill	Geared	1920	Cleveland Hardware Co.	Cleveland, Ohio	W
19	300	600	2200	60 cy.	Merchant Mill	Geared	1916	Tennessee Coal, Iron & R. R. Co.	Bessemer, Ala.	GE
20	300	720	440	60 cy.	14″ Merchant Mill	Geared	1913	Bourne Fuller Co.	Cleveland, Ohio	GE
21	300	720	440	60 cy.	12″ Merchant Mill	Geared	1919	The Stanley Works	New Britain, Conn.	GE
22	300	750	3000	50 cy.	Merchant Mill	Geared	1923	Cons. Rolling Mills Co.	Mexico City, Mex.	GE
23	300–200	920–360	220	d.c.	Merchant Mill	Direct	1919	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
24	350–350	150–100	6600	25 cy.	12″ Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
25	350	200–300	250	d.c.	9″ Merchant Mill	Direct	1919	National Farming Machinery, Ltd.	Montmagny, P. Q.	W
26	350–350	240–480	240	d.c.	10″ Merchant Mill	Direct	1923	LaClede Steel Co.	St. Louis, Mo.	GE
27	350	250–325	230	d.c.	9″ Merchant Mill	Direct	1921	Wayne Steel Co.	Erie, Pa.	W
28	350–235	300–200	6600	25 cy.	Merchant Mill	Geared	1920	Illinois Steel Co.	Gary, Ind.	GE
29	350–350	360–240	240	d.c.	10″ Merchant Mill	Direct	1911	LaClede Steel Co.	St. Louis, Mo.	GE
30	350–350	375–214	6600	25 cy.	9″ Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
31	350	480	2200	25 cy.	12″ Roughing Stand Mill	Geared	1923	Halcomb Steel Co.	Syracuse, N. Y.	W
32	350	420	2200	50 cy.	Merchant Mill	Geared	1919	Southern California Iron & SteelCo.	Los Angeles, Cal.	W
33	350	524–850	230	d.c.	18″ Blading Mill	Geared	1924	W. E. & M. Co.	South Phila. Works	W
34	350	580	2200	60 cy.	Merchant Mill	Geared	1916	Copper Clad Steel Co.	Pittsburgh, Pa.	W
35	350	590	2200	60 cy.	12″ Merchant Mill	Geared	1918	Indianapolis & Eastern TractionCo.	Indianapolis, Ind.	W
36	350	700	2200	60 cy.	Merchant Mill	Geared	1918	Kilby Car & Foundry Co.	Anniston, Ala.	W
37	400	200–300	230	d.c.	9″ Merchant Mill	Direct	1914	United Alloy Steel Corp.	Canton, Ohio	W
38	400	210–350		d.c.	Merchant Mill		1915	Buffalo Bolt Company	N. Tonawanda, N. Y.	CW
39	400	240–721	600	d.c.	9″ Merchant Mill	Geared	1926	Illinois Steel Co.	Gary, Ind.	GE
40	400	240–721	600	d.c.	9″ Merchant Mill	Geared	1926	Illinois Steel Co.	Gary, Ind.	GE
41	400	240–721	600	d.c.	9″ Merchant Mill	Geared	1926	Illinois Steel Co.	Gary, Ind.	GE
42	400	240–721	600	d.c.	9″ Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
43	400–400	250–500	230	d.c.	10″ Merchant Mill	Direct	1920	Timken Roller Bearing Co.	Canton, Ohio	GE
44	400	300	2200	25 cy.	Merchant Mill	Rope	1909	American Steel & Wire Co.	Cleveland, Ohio	GE
45	400	300	2200	25 cy.	Merchant Mill	Rope	1909	American Steel & Wire Co.	Cleveland, Ohio	GE
46	400	300	2500	25 cy.	Merchant Mill	Rope	1909	American Steel & Wire Co.	Cleveland, Ohio	GE
47	400	300	2200	25 cy.	Merchant Mill	Rope	1909	American Steel & Wire Co.	Cleveland, Ohio	GE
48	400–500	300–600	600	d.c.	9″ Finishing Mill	Geared	1921	Driver Harris Co.	Harrison, N. J.	W
49	400	385	550	40 cy.	22″ Puddle Mill	Geared	1917	Cohoes Rolling Mill Co.	Cohoes, N. Y.	W
50	400	400–450	220	d.c.	8″ Merchant Mill	Direct	1911	Illinois Steel Co.	Milwaukee, Wis.	W
51	400	485	440	25 cy.	9″ Merchant Mill	Geared	1915	Hess Steel Corporation	Baltimore, Md.	W
52	400	585	4000	60 cy.	14″ Merchant Mill	Geared	1922	Calumet Steel Co.	Chicago, Ill.	W
53	400	600	440	60 cy.	12″ Merchant Mill	Geared	1919	The Stanley Works	New Britain, Conn.	GE
54	450	211–422	600	d.c.	9″ Merchant Mill	Geared	1926	Illinois Steel Co.	Gary, Ind.	GE
55	450	211–422	600	d.c.	9″ Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
56	450	354–230	2200	60 cy.	8″ Merchant Mill	Direct	1919	Bourne-Fuller Co.	Cleveland, Ohio	W
57	450	440	2200	60 cy	Merchant Mill	Geared	1920	Kansas City Bolt & Nut Co.	Kansas City, Mo.	W
58	450	450	2080	60 cy.	18″ Merchant Mill	Geared	1919	Columbia Steel Co.	Pittsburgh, Cal.	GE
59	450	450	2080	60 cy.	12″ Merchant Mill	Geared	1919	Columbia Steel Co.	Pittsburgh, Cal.	GE
60	450	585	2200	50 cy.	14″ Merchant Mill	Geared	1918	Columbia Steel Co.	Los Angeles, Cal.	W
61	450	730–490	4000	25 cy.	10″ Merchant Mill	Geared	1917	Atlas Steel Corporation	Dunkirk, N. Y.	W
62	450–360	870–695	2200	60 cy.	10″ Merchant Mill	Geared	1913	Cleveland Hardware Co.	Cleveland, Ohio	W
63	450–360	875–700	2200	50 cy.	9″ Merchant Mill	Geared	1915	National Lock Washer Co.	Riverside, N. J.	W
64	475–350	240–181	440	25 cy.	10″ Merchant Mill	Direct	1914	Kansas City Bolt & Nut Co.	Kansas City, Mo.	W
65	485–360	870–695	2200	60 cy.	10″ Merchant Mill	Geared	1915	Old Dominion Iron & Nail Co.	Richmond, Va.	W
66	500	88	6600	25 cy.	16″ Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
67	500–385–250	140–100–65	440	25 cy.	14″ Merchant Mill	Direct	1923	Halcomb Steel Co.	Syracuse, N. Y.	GE
68	500	130–310	600	d.c.	10″ Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
69	500	150–225	250	d.c.	12″ Merchant Mill	Direct	1919	National Farming Machinery, Ltd.	Montmagny, P. Q.	W
70	500	150–550	600	d.c.	10″ Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
71	500	175–350	250	d.c.	12″ Merchant Mill	Direct	1926	Pittsburgh Cruc'ble Steel Co.	Midland, Pa.	GE
72	500	184	2200	25 cy.	12″ Merchant Mill	Rope	1905	Ontario Iron & Steel Co.	Welland, Ont.	W
73	500	184	2200	25 cy.	16″ Merchant Mill	Direct	1908	Bethlehem Steel Co.	Johnstown, Pa.	W
74	500	190	230	d.c.	18″ Tandem Mer. (Roughing) Mill	Rope	1910	Sharon Steel Hoop Co.	Sharon, Pa.	GE
75	500	200–400	250	d.c.	10″ Cont. Rolling Mill	Coupled	1925	Republic Iron & Steel Co.	Youngstown, Ohio	AC
76	500–330	242–161	440	25 cy.	16″ and 10″ Merchant Mill	Direct & Rope	1913	Kansas City Bolt & Nut Co.	Kansas City, Mo.	W
77	500	244	2200	25 cy.	10″ Merchant Mill	Direct	1908	Bethlehem Steel Co.	Johnstown, Pa.	W
78	500	250–350	600	d.c.	9″ Merchant Mill	Direct	1921	Missouri Rolling Mill Co.	St. Louis, Mo.	W
79	500	267–800	230	d.c.	Hot Merchant Mill	Geared	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
80	500	267–800	230	d.c.	Hot Merchant Mill	Geared	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
81	500	267–800	230	d.c.	Hot Merchant Mill	Direct	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
82	500	267–800	230	d.c.	Hot Merchant Mill	Direct	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
83	500	267–800	230	d.c.	Hot Merchant Mill	Direct	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
84	500	292	4000	60 cy.	8″ Merchant Mill	Direct	1920	Calumet Steel Co.	Chicago, Ill.	W
85	500	320	2200	60 cy.	12″ Merchant Mill	Geared	1919	Baltimore & Ohio Railroad	Cumberland, Md.	W
86	500–500	327–200	440	60 cy.	9″ Merchant Mill	Direct	1913	Union Rolling Mills Co.	Cleveland, Ohio	GE
87	500	360	2200	25 cy.	8″ Merchant Mill	Direct	1912	Bethlehem Steel Co.	Johnstown, Pa.	W
88	500	435	440	60 cy.	8″ Merchant Mill	Rope	1911	Carnegie Steel Co., Painter Mill	Pittsburgh, Pa.	W
89	500	435	440	60 cy.	8″ Merchant Mill	Rope	1912	Carnegie Steel Co., Painter Mill	Pittsburgh, Pa.	W
90	500	435	440	60 cy.	8″ Merchant Mill	Rope	1912	Carnegie Steel Co., Painter Mill	Pittsburgh, Pa.	W
91	500	435	440	60 cy.	9″ Merchant (Fin.) Mill	Belted	1914	Carnegie Steel Co., Painter Mill	Pittsburgh, Pa.	W
92	500	435	440	60 cy.	10″ Merchant (Fin.) Mill	Belted	1914	Carnegie Steel Co., Painter Mill	Pittsburgh, Pa.	W
93	500	435	2200	60 cy.	Merchant Mill	Geared	1916	Seymour Manufacturing Co.	Waterbury, Conn.	W
94	500	480–250	230	d.c.	Merchant Mill	Coupled	1923	Buffalo Bolt Company	N. Tonawanda, N. Y.	CW
95	500	450	2300	60 cy.	Merchant Mill	Geared	1916	Pacific Coast Steel Co.	San Francisco, Cal.	GE
96	500	487	6600	25 cy.	8″ Merchant Mill	Direct	1913	Minnesota Steel Co.	Duluth, Minn.	W
97	500–500–500	500–375–265	2200	25 cy.	10″ Merchant Mill	Direct & Belt	1916	Donner Steel Co.	Buffalo, N. Y.	GE
98										
99	500	500	2300	25 cy.	18″ Merchant Mill	Geared	1919	Halcomb Steel Co.	Syracuse, N. Y.	GE
100	500	575–865	2200	60 cy.	10″ Merchant Mill	Geared	1921	International Nickel Co.	Huntington, W. Va.	W
101	500	575–865	2200	60 cy.	10″ Merchant Mill	Geared	1921	International Nickel Co.	Huntington, W. Va.	W
102	500	600	2200	60 cy.	Merchant Mill	Geared	1923	Taunton-New Bedf'd Cop. Co.	Taunton, Mass.	GE
103	500–330	730–485	2200	50 cy.	8″ Merchant Mill	Geared	1919	Southern California Iron & SteelCo.	Los Angeles, Cal.	W
104	500–250	750–375	3000	50 cy.	Merchant Mill	Geared	1923	Consolidated Rolling Mills Co.	Mexico City, Mex.	GE

MERCHANT MILL DRIVES—Continued

No.	Horse Power	R.P.M.	Volt-age	Cycle	Type and Size of Mill	Method of Drive	Date of Pur-chase	Name of Plant	Location	Mfgd. By
105	500-400	775-585	550	40 cy.	10" Merchant Mill	Geared	1917	Cohoes Rolling Mill Co.	Cohoes, N. Y.	W
106	500	870	2200	60 cy.	16" Merchant Mill	Geared	1919	McConway Torley Co.	Pittsburgh, Pa.	W
107	500-400	875-700	550	60 cy.	10" & 14" Merchant Mill	Geared	1916	The Texas Steel Co.	Fort Worth, Tex.	W
108	500	884	2200	60	9" Rougher Mill	Geared	1925	Crucible Steel Co.	Atha Works	W
109	500	888-540	6600	60 cy.	11" Finishing Stand. Mil	Coupled		Tennessee Coal, Iron & R. R. Co.	Birmingham, Ala.	AC
110	500-250	890-513 440-256	2200	60 cy.	10" Merchant Mill	Geared	1919	Hunter Crucible Steel Co.	Cleveland, Ohio	W
111	500	900	440	60	10" Merchant Mill	Geared	1925	Latrobe Elec. Steel Co.	Latrobe, Pa.	GE
112	525	125	2200	25 cy.	Merchant Mill	Rope	1910	American Sheet & Tin Plate Co.	Gary, Ind.	GE
113	550	120-300	250	d.c.	11" Merchant Mill	Direct	1923	Firth Sterling Steel Co.	McKeesport, Pa.	W
114	550	336-588	600	d.c.	9" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
115	550	420-714	600	d.c.	9" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
116	550	420-714	600	d.c.	9" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
117	550-360	875-585	2200	60 cy.	12" Merchant Mill	Geared	1917	Norfolk & Western Railroad Co.	Roanoke, Va.	W
118	550	880	2200	60 cy.	16" Merchant Mill	Geared	1919	Danville Structural Tube Co.	Danville, Pa.	W
119	550	880	2200	60 cy.	Merchant Mill	Geared	1921	Danville Structural Tube Co.	Danville, Pa.	W
120	575	300-214	6600	25 cy.	10" Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
121	575-575	375-250	6600	25 cy.	8" Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
122	600	200-300	230	d.c.	9" Merchant Mill	Direct	1914	United Alloy Steel Corporation	Canton, Ohio	W
123	600	200-300	230	d.c.	9" Merchant Mill	Direct	1915	United Alloy Steel Corporation	Canton, Ohio	W
124	600-600	214- 93	6600	25 cy.	12" Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
125	600-525	250-125	2200	25 cy.	16" & 14" Merchant Mill	Direct & Rope	1913	Bethlehem Steel Co.	Steelton, Pa.	GE
126	600-400-200	321-214-107	440	25 cy.	9" Merchant Mill	Direct	1923	Halcomb Steel Co.	Syracuse, N. Y.	GE
127	600	365	6600	25 cy.	10" Merchant Mill	Direct	1913	Minnesota Steel Co.	Duluth, Minn.	W
128	600-400	375-210	2200	25 cy.	9" Merchant Mill	Direct	1912	Gulf States Steel Co.	Birmingham, Ala.	GE
129	600	390	440	60 cy.	20" Merchant Mill	Geared	1916	Stanley Works	New Haven, Conn.	W
130	600	400-800	250	d.c.	18" Merchant Mill	Geared	1926	Pittsburgh Crucible Steel Co.	Midland, Pa.	GE
131	600-600-600	469-375-281	2200	25 cy.	8" Merchant Mill	Direct	1919	Donner Steel Co.	Buffalo, N. Y.	GE
132	600	485	2200	25 cy.	10" Merchant (Fin.) Mill	Direct	1912	Laclede Steel Co.	Alton, Ill.	W
133	600	485	440	25 cy.	20" Merchant Mill	Geared	1915	Hess Steel Corporation	Baltimore, Md.	W
134	600	500	2200	60 cy.	20" Merchant Mill	Geared	1916	Carpenter Steel Co.	Reading, Pa.	W
135	600	500	2200	60 cy.	16" Merchant Mill	Geared	1917	Central Steel Co.	Massillon, Ohio	W
136	600	500	440	25 cy.	16" Merchant Mill	Geared	1919	Buffalo Bolt Co.	N. Tonawanda, N. Y.	GE
137	600	585-325	550	40 cy.	16" Merchant Mill	Geared	1917	Cohoes Rolling Mill Co.	Cohoes, N. Y.	W
138	600-500-400	600-500-400	2200	25 cy.	Merchant Mill, No. 10	Direct	1916	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
139	650	160	440	60 cy.	14" Guide Mill	Coupled		Withrow Steel Co.	Neville Island, Pa.	AC
140	650	184	6600	25 cy.	18" Merchant Mill	Direct	1909	Indiana Steel Co.	Gary, Ind.	W
141	650	184	6600	25 cy.	14" Merchant Mill	Direct	1909	Indiana Steel Co.	Gary, Ind.	W
142	650	200	440	60 cy.	14" Guide Mill	Coupled		Withrow Steel Co.	Neville Island, Pa.	AC
143	650	210	6600	25 cy.	12" Merchant Mill	Geared	1909	Indiana Steel Co.	Gary, Ind.	W
144	650	293	2200	60 cy.	9" Merchant Mill	Rope	1919	Harrisburg Pipe & Pipe Bending Co.	Harrisburg, Pa.	W
145	650	500	6600	25 cy.	10" Merchant Mill	Direct	1916	Illinois Steel Co.	Gary, Ind.	GE
146	650	500	6600	25 cy.	10" Merchant Mill	Direct	1916	Illinois Steel Co.	Gary, Ind.	GE
147	700	130-310	600	d.c.	10" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
148	700	130-310	600	d.c.	10" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
149	700	187	2200	25 cy.	14" Merchant Mill	Direct	1920	Donner Steel Co.	Buffalo, NY.	GE
150	700	210-660	600	d.c.	10" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
151	700	210-660	600	d.c.	10" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
152	700	240-450	250	d.c.	9" Merchant Mill	Direct	1925	Crucible Steel Co.	Pittsburgh, Pa.	GE
153	700	364	2200	25 cy.	8" Merchant Mill	Direct	1912	Laclede Steel Co.	Alton, Ill.	W
154	700-600-400	400-300-200	2200	25 cy.	Merchant Mill, No. 10	Direct	1916	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
155	700-600-400	400-300-200	2200	25 cy.	Merchant Mill, No. 10	Belt	1916	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
156	700	440	2200	60	16" Mill	Geared	1926	Connors Steel Co.	Birmingham, Ala.	AC
157	700	480-290	2200	25 cy.	12" Merchant Mill	Geared	1916	Halcomb Steel Co.	Syracuse, N. Y.	W
158	700	730-490	4000	25 cy.	14" Merchant Mill	Geared	1916	Atlas Steel Corporation	Dunkirk, N. Y.	W
159	700	735	4000	25 cy.	14" Merchant Mill	Geared	1920	Atlas Steel Corporation	Dunkirk, N. Y.	W
160	700	880-530	2200	60 cy.	10" Finishing Mill	Geared	1923	Crucible Steel Co. of America, Park Works	Pittsburgh, Pa.	W
161	750	150-250	600	d.c.	14" Merchant Mill	Direct	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
162	750	277	2200	60 cy.	18" Merchant Mill	Geared	1915	Pacific Coast Steel Co.	San Francisco, Cal.	GE
163	750	514	2200	60	Merchant Mill	Geared	1920	W. M. Lewis	Indianapolis, Ind.	AC
164	800	163	2200	25 cy.	22" Merchant Mill	Rope	1905	Ontario Iron & Steel Co.	Welland, Ont.	W
165	800	189	2200	60	Merchant Mill	Direct	1925	Pacific Coast Steel Co.	San Francisco, Cal.	CW
166	800	200-400	250	d.c.	9" 7 Stand Merchant Mill	Coupled	1926	Crucible Steel Co. of America	Harrison, N. J.	AC
167	800	200-415	600	d.c.	12" Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	GE
168	800	200-415	600	d.c.	12" Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	GE
169	800	200-415	600	d.c.	12" Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	GE
170	800-800	214-167	6600	25 cy.	16" Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
171	800	240-480	600	d.c.	12" Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	GE
172	800	257	2200	60 cy.	18" Merchant Mill	Geared	1919	Columbia Steel Co.	Pittsburgh, Cal.	GE
173	800	268	2200	60 cy.	14" & 10" Merchant Mill	Rope	1912	United Alloy Steel Corporation	Canton, Ohio	W
174	800	275-550	700	d.c.	12" Merchant Mill	Geared	1925	Penn Seaboard Steel Co.	New Castle, Del.	GE
175	800	275-550	700	d.c.	12" Merchant Mill	Geared	1925	Penn Seaboard Steel Co.	New Castle, Del.	GE
176	800	275-550	700	d.c.	9" Merchant Mill	Direct	1925	Penn Seaboard Steel Co.	New Castle, Del.	GE
177	800	320	440	60 cy.	9" Merchant Mill	Belted	1914	Carnegie Steel Co. Painter Mill	Pittsburgh, Pa.	W
178	800	320	440	60 cy.	10 " Merchant Mill	Belted	1914	Carnegie Steel Co. Painter Mill	Pittsburgh, Pa.	W
179	800	350-700	600	d.c.	20" Merchant (Breakd'n)	Geared	1921	Driver Harris Co.	Harrison, N. J.	W
180	800	350-750	600	d.c.	8" Merchant Mill Cont.	Direct	1925	Inland Steel Co.	Indiana Harbor, Ind.	GE
181	800	353	2200	60 cy.	12"-5 Stand. Merch. Mill	Belt	1924	United Steel Co.	Everett, Wash.	W
182	800	367	2200	25 cy.	8" Merchant Mill	Direct	1917	Donner Steel Co.	BuZalo, N. Y.	W
183	800	375	2200	25 cy.	Merchant Mill	Geared	1920	Bethlehem Steel Co.	Johnstown, Pa.	GE
184	800	400-600	600	d.c.	16" Merchant Mill	Geared	1921	Missouri Rolling Mill Co.	St. Louis, Mo.	W
185	800	410-720	230	d.c.	16" Merchant (Rougher)	Geared	1923	Timken Roller Bearing Co.	Canton, Ohio	W
186	800	440	2200	60 cy.	18" Merchant (Fin.) Mill	Geared	1918	Canton Sheet Steel Co.	Canton, Ohio	W
187	800	705	2200	60 cy.	12" Merchant Mill	Geared	1919	McConway Torley Co.	Pittsburgh, Pa.	W
188	800	730-365	2200	50 cy.	12" Merchant Mill	Geared	1917	Columbia Steel Co.	Los Angeles, Cal.	W
189	800	730-365	2200	50 cy.	22" Merchant Mill	Geared	1917	Columbia Steel Co.	Los Angeles, Cal.	W
190	800	730-485	2200	50 cy.	12" Merchant Mill	Geared	1919	Southern California Iron & Steel Co.	Los Angeles, Cal.	W
191	800	875-700	2200	60 cy.	16" Merchant Mill	Geared	1920	Kansas City Bolt & Nut Co.	Kansas City, Mo.	W
192	800	892-623	2200	60 cy.	20" Merchant (Fin.) Mill	Geared	1918	Hoosier Rolling Mill	Terre Haute Ind.	W
193	800-800	900-720	2200	60 cy.	9" Merchant Mill	Geared	1923	Knoxville Iron Co.	Knoxville, Tenn.	GE
194	800-800	900-720	2200	60 cy.	9" Merchant Mill	Geared	1923	Knoxville Iron Co.	Knoxville, Tenn.	GE
195	840-700-560	360-300-240	6600	25	9" Merchant Mill	Direct	1925	Bethlehem Steel Co.	Bethlehem, Pa.	GE
196	850-570	214-143	6600	25 cy.	Merchant Mill	Direct	1920	Illinois Steel Co.	Gary, Ind.	GE
197	850-850	214-187	6600	25 cy.	10" Merchant Mill	Rope	1916	Illinois Steel Co.	Gary, Ind.	GE
198	850-850	214-187	6600	26 cy.	10" Merchant Mill	Rope	1916	Illinois Steel Co.	Gary, Ind.	GE
199	800	94	2200	25 cy.	18" Merchant Mill	Direct	1912	Gulf States Steel Co.	Birmingham, Ala.	GE
200	800	100	6600	25 cy.	16" Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
201	900-900	214-150	2200	25 cy.	12" Merchant Mill	Direct	1910	Algoma Steel Co.	Sault St. Marie, Can.	GE
202	1000	184	2200	25 cy.	16" Merchant Mill	Direct	1908	Bethlehem Steel Co.	Johnstown, Pa.	W
203	1000	200-600	600	d.c.	10" Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	W
204	1000	250	2200	60 cy.	18" Merchant Mill	Geared	1918	Canton Sheet & Steel Co.	Canton, Ohio	W
205	1000	290-500	600	d.c.	9" Merchant Mill	Geared	1926	Illinois Steel Co.	Gary, Indiana	GE
206	1000	295	2200	60 cy.	12" Cont. and 10" Merchant Mill	Rope & Direct	1920	Kansas City Bolt & Nut Co.	Kansas City, Mo.	W

MERCHANT MILL DRIVES—Continued

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
207	1000	300	2200	25 cy.	10″ Merchant Mill	Geared	1916	Halcomb Steel Co.	Syracuse, N. Y.	GE
208	1000	350-150	2200	60 cy.	12″ Merchant Mill	Direct	1918	Central Steel Co.	Massillon, Ohio	W
209	1000	365	2200	50 cy.	Merchant Mill	Geared	1923	Columbia Steel Co.	Torrance, Cal.	W
210	1000	375	4400	25 cy.	Merchant Mill	Geared	1919	Buffalo Bolt Co.	N. Tonawanda, N. Y.	GE
211	1000	518-800	250	d.c.	20″ Merchant Mill	Geared	1919	National Farming Machinery, Ltd.	Montmagny, P. Q.	W
212	1000	590-450	4000	60 cy.	14″ Merchant Mill	Geared	1920	Calumet Steel Co.	Chicago, Ill.	W
213	1000	590-450	4000	60 cy.	14″ Merchant Mill	Geared	1920	Calumet Steel Co.	Chicago, Ill.	W
214	1000	725	2200	25 cy.	12″ Merchant Mill	Geared	1922	Burlington Steel Co., Ltd.	Hamilton, Ont.	W
215	1100	294-205	2200	60 cy.	20″ Merchant Mill	Rope	1912	United Alloy Steel Corporation	Canton, Ohio	W
216	1190-875-525	350-250-150	2200	25	Merchant Mill	Direct-Rope	1925	Bethlehem Steel Co.	Lebanon, Pa.	GE
217	1200-1200	150-250	230	d.c.	12″ Merchant Mill	Direct	1920	Timken Roller Bearing Co.	Canton, Ohio	GE
218	1200	292	2200	25 cy.	12″ Cont. and 10″	Direct				
219	1200	160-320	250	d.c.	12″ Merchant Mill Merchant Mill	Direct & Rope	1926 1912	Pittsburgh Crucible Steel Co. Laclede Steel Co.	Midland, Pa. Alton, Ill.	GE W
220	1200-1150-800	300-214-150	2200	25 cy.	Merchant Mill, No. 10	Geared	1916	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
221	1200-1000-800	300-250-200	4400	25 cy.	14″ Merchant Mill	Direct	1919	Buffalo Bolt Co.	N. Tonawanda, N. Y.	GE
222	1200	300-500	600	d.c.	10″ Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	W
223	1200	368	2200	50 cy.	20″ Merchant Mill	Geared	1919	Southern California Iron & Steel Co.	Los Angeles, Cal.	W
224	1200	485	6400	25 cy.	12″ Merchant Mill	Geared	1916	American Steel & Wire Co.	Cleveland, Ohio	W
225	1200	590-407	2200	60 cy.	20″ Mer. (Rough.) Mill	Geared	1918	Hoosier Rolling Mill Co.	Terre Haute, Ind.	W
226	1250	375	2200	25 cy.	Merchants Bar Mill	Geared	1919	Valley Steel Co.	Milwaukee, Wis.	AC
227	1250	712-430	6600	60 cy.	3 Stand 12″ Mill	Coupled	1921	Tennessee Coal, Iron & R. R. Co.	Birmingham, Ala.	AC
228	1300- 900	214-140	2200	25 cy.	12″ Merchant Mill	Direct	1912	Gulf States Steel Co.	Birmingham, Ala.	GE
229	1300-1300	214-187	6600	25 cy.	10″ Merchant Mill	Geared	1916	Illinois Steel Co.	Gary, Ind.	GE
230	1400- 945	600-405	2200	60 cy.	21″ Merchant Mill	Geared	1915	Union Rolling Mills Co.	Cleveland, Ohio	GE
231	1500	50-80	600	d.c.	8″ Merchant Cont. Mill	Direct	1925	Inland Steel Co.	Indiana Harbor, Ind.	GE
232	1500	80	2200	60 cy.	Morgan Cont. Mill	Coupled	1920	Interstate Iron & Steel Co.	Chicago, Ill.	AC
233	1500	94	2200	25 cy.	18″ Merchant Mill	Direct	1910	Algoma Steel Co.	S'lt. St. Marie, Can.	GE
234	1500	100-150	600	d.c.	14″ Merchant Mill	Direct	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
235	1500	200-300	600	d.c.	10″ Merchant Mill	Direct	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
236	1500	218-145	6600	25 cy.	18″ Merchant Mill	Geared	1916	Carnegie Steel Co.	Duquesne, Pa.	W
237	1500-1250-875	300-250-175	2200	50	Merchant Mill	Direct	1925	Southern Calif. Iron & Steel Co.	Los Angeles, Cal.	GE
238	1500-1200-900	320-275-200	2200	50	10″ Merchant Mill	Geared	1925	Pacific Coast Steel Co.	San Francisco, Cal.	GE
239	1500	360-240	6600	25 cy.	12″ Merchant Mill	Rope	1916	Carnegie Steel Co.	Duquesne, Pa.	W
240	1500-1125	375-281	2200	25 cy.	10″ Merchant Mill	Geared	1916	Donner Steel Co.	Buffalo, N. Y.	GE
241	1500	593	6600	60 cy.	6 Stand 11″ Mill	Coupled	1921	Tennessee Coal, Iron & R. R. Co.	Birmingham, Ala.	AC
242	1500	890-540	6600	60 cy.	4 Stand 12″ Mill	Coupled	1921	Tennessee Coal, Iron & R. R. Co.	Birmingham, Ala.	AC
243	1800	200-400	600	d.c.	8″ Merchant Cont. Mill	Geared	1925	Inland Steel Co.	Indiana Harbor, Ind.	GE
244	1800-1800	250-125	6600	25 cy.	22″ Merchant Mill	Geared	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
245	1800	350-640	500	d.c.	18″ Rougher Merch. Mill	Geared	1926	Pittsburgh Crucible Steel Co.	Midland, Pa.	AC
246	1800	550-650	250	d.c.	22″ Merchant Mill	Geared	1925	Crucible Steel Co.	Pittsburgh, Pa.	GE
247	2000	94	2200	25 cy.	18″ Merchant Mill	Direct	1912	Forged Steel Wheel Co.	Butler, Pa.	GE
248	2000	113	6600	25 cy.	12″ Merchant Mill	Direct	1909	Indiana Steel Co.	Gary, Ind.	W
249	2000	134-275	600	d.c.	10″ Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	W
250	2000	163-113	6600	25 cy.	10″ Merchant Mill	Direct	1909	Indiana Steel Co.	Gary, Ind.	W
251	2000	230-460	600	d.c.	Merchant Mill	Direct	1925	International Harvester Co.	Chicago, Ill.	W
252	2000	230-460	600	d.c.	Merchant Mill	Direct	1925	International Harvester Co.	Chicago, Ill.	W
253	2000	230-460	600	d.c.	Merchant Mill	Direct	1925	International Harvester Co.	Chicago, Ill.	W
254	2000	250-150	2200	60 cy.	Morgan Cont. Mill	Coupled	1919	Interstate Iron & Steel Co.	Chicago, Ill.	AC
255	2000	315-500	600	d.c.	10″ Merchant Mill	Geared	1926	Illinois Steel Co.	Gary Ind.	GE
256	2500	113-91	6600	25 cy.	12″ Merchant Mill	Direct	1909	Indiana Steel Co.	Gary, Ind.	W
257	3000	209	6600	25 cy.	12″ and 16″ Merchant Mill	Rope & Geared	1913	Minnesota Steel Co.	Duluth, Minn.	W
258	3000	375	2200	25 cy.	14″ Merchant Mill	Geared	1916	Donner Steel Co.	Buffalo, N. Y.	GE
259	3000	505-300	2200	60 cy.	12″ Merchant Mill	Geared	1920	United Alloy Steel Corporation	Canton, Ohio	W
250	3200	91	6600	25 cy.	18″ Merchant Mill	Geared	1909	Indiana Steel Co.	Gary, Ind.	W
261	3200	91	6600	25 cy.	14″ Merchant Mill	Geared	1909	Indiana Steel Co.	Gary, Ind.	W
262	4000	147	6600	25 cy.	20″ Merchant Mill	Geared	1916	Illinois Steel Co.	Gary, Ind.	W
263	4500-4500	67.5-110	500	d.c.	14″ Merchant Mill	Geared	1923	Ford Motor Co.	Detroit, Mich.	GE
264	4500-4500	500-300	2200	25 cy.	14″ Merchant Mill	Geared	1923	Inland Steel Co.	Indiana Harbor, Ind.	GE
265	5610-4500-3370	156-125-93.6	6600	25	12″ Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, O.	GE

WIRE MILLS

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	300	375	2200	25 cy.	Wire Mill	Geared	1910	Bethlehem Steel Co.	Johnstown, Pa.	GE
2	300	375	2200	25 cy.	Wire Mill	Geared	1910	Bethlehem Steel Co.	Johnstown, Pa.	GE
3	300	375	2200	25 cy.	Wire Mill	Geared	1910	Bethlehem Steel Co.	Johnstown, Pa.	GE
4	300	375	2200	25 cy.	Wire Mill	Geared	1910	Bethlehem Steel Co.	Johnstown, Pa.	GE
5	300	375	2200	25 cy.	Wire Mill	Belt	1915	American Steel & Wire Co.	Cleveland, Ohio	GE
6	300	375	2200	25 cy.	Wire Mill	Belt	1915	American Steel & Wire Co.	Cleveland, Ohio	GE
7	300	375	2200	25 cy.	Wire Mill	Belt	1915	American Steel & Wire Co.	Cleveland, Ohio	GE
8	300	375	2200	25 cy.	Wire Mill	Belt	1915	American Steel & Wire Co.	Cleveland, Ohio	GE
9	300	375	2200	25 cy.	Wire Mill	Belt	1915	American Steel & Wire Co.	Cleveland, Ohio	GE
10	300	450	440	60 cy.	Wire Mill		1914	American Steel & Wire Co.	Joliet, Ill.	AC
11	300	450	440	60 cy.	Wire Mill	Geared	1914	American Steel & Wire Co.	Joliet, Ill.	AC
12	300	600	2300	60 cy.	Wire Mill	Geared	1917	American Steel & Wire Co.	Waukegan, Ill.	GE
13	325	600	2300	60 cy.	Wire Mill	Geared	1917	American Steel & Wire Co.	Waukegan, Ill.	GE
14	350	300	230	d.c.	Wire Draw Bench	Coupled	1908	Pittsburgh Steel Co.	Monessen, Pa.	CW
15	350	300	230	d.c.	Wire Draw Bench	Coupled	1908	Pittsburgh Steel Co.	Monessen, Pa.	CW
16	350	300	230	d.c.	Wire Draw Bench	Coupled	1908	Pittsburgh Steel Co.	Monessen, Pa.	CW
17	350	300	230	d.c.	Wire Draw Bench	Coupled	1911	Pittsburgh Steel Co.	Monessen, Pa.	CW
18	400	600	2200	60 cy.	Wire Rod Mill	Geared	1917	Rome Wire Co.	Rome, N. Y.	AC
19	400	600	440	60 cy.	Wire Rod Mill	Coupled	1917	Rome Wire Co.	Rome, N. Y.	AC
20	500	450	440	60 cy.	Wire Mill	Geared	1916	Waclark Wire Co.	Elizabeth, N. J.	GE
21	750	514	2200	60 cy.	Wire Rod Mill	Geared	1917	Kokomo Steel & Wire Co.	Kokomo, Ind.	AC
22	800	450	2200	60	Wire Rod Mill	Coupled	1919	Black Steel & Wire Co.	Kansas City, Mo.	AC
23	900	163	2200	60 cy.	Wire Rod Mill	Coupled	1917	Kokomo Steel & Wire Co.	Kokomo, Ind.	AC
24	900	163	2200	60	Wire Rod Mill	Rope	1919	Black Steel & Wire Co.	Kansas City, Mo.	AC
25	1200	514	2200	60 cy.	Wire Rod Mill	Geared	1917	Kokomo Steel & Wire Co.	Kokomo, Ind.	AC
26	1300	360	2200	60 cy.	Wire Rod Mill	Coupled	1917	Kokomo Steel & Wire Co.	Kokomo, Ind.	AC
27	1500	514	2200	60 cy.	Wire Rod Mill	Coupled	1917	Kokomo Steel & Wire Co.	Kokomo, Ind.	AC

WHEEL MILLS

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	300	450–750	230	d.c.	Wheel Mill	Geared	1913	Bethlehem Steel Co.	Johnstown, Pa.	AC
2	300	450–750	230	d.c.	Wheel Mill	Geared	1913	Bethlehem Steel Co.	Johnstown, Pa.	AC
3	500	155–500	250	d.c.	Tyre Mill	Direct	1923	McConway Torley Co.	Pittsburgh, Pa.	W
4	500	214	6600	25 cy.	Axle Mill	Geared	1909	Illinois Steel Co.	Gary, Ind.	GE
5	500	375	2200	25 cy.	Wheel Mill	Geared	1913	Bethlehem Steel Co.	Johnstown, Pa.	AC
6	700	200	240	d.c.	Pontoon Mill	Direct	1926	M. W. Kellogg	Newark, N. J.	CW
7	700	200	240	d.c.	Pontoon Mill	Direct	1926	M. W. Kellogg	Newark, N. J.	CW
8	750	130	550	d.c.	Wheel Mill	Direct	1915	Carnegie Steel Co.	McKees Rocks, Pa.	GE
9	750	160	550	d.c.	Wheel Mill	Direct	1916	Edgewater Steel Co.	Oakmont, Pa.	GE
10	750	160	550	d.c.	Wheel Mill	Direct	1916	Edgewater Steel Co.	Oakmont, Pa.	GE
11	750	160	550	d.c.	Wheel Mill	Direct	1919	Edgewater Steel Co.	Oakmont, Pa.	GE
12	900–720	200–160	220	d.c.	Wheel Mill	Geared	1906	Bethlehem Steel Co.	Johnstown, Pa.	GE
13	1000	137	6600	25 cy.	Wheel Mill	Geared	1916	Illinois Steel Co.	Gary, Ind.	AC
14	1000	375	2200	25 cy.	Wheel Mill	Geared	1913	Bethlehem Steel Co.	Johnstown, Pa.	AC
15	2000	375	2200	25 cy.	Wheel Mill	Geared	1916	Bethlehem Steel Co.	Johnstown, Pa.	AC

ALUMINUM, BRASS, COPPER AND NON-FERROUS MILL DRIVES

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	300	290	2200	25 cy.	Brass Mill	Geared	1920	American Brass Co.	Buffalo, N. Y.	W
2	300	290	2200	25 cy.	Brass Mill	Geared	1920	American Brass Co.	Buffalo, N. Y.	W
3	300	290	2200	25 cy.	Brass Mill	Geared	1920	American Brass Co.	Buffalo, N. Y.	W
4	300	290	2200	25 cy.	Brass Mill	Geared	1920	American Brass Co.	Buffalo, N. Y.	W
5	300	300–600	230	d.c.	20″ x 30″ Brass Mill	Geared	1920	West Virginia Metal Products Co.	Fairmont, W. Va.	W
6	300	300–600	230	d.c.	20″ x 30″ Brass Mill	Geared	1920	West Virginia Metal Products Co.	Fairmont, W. Va.	W
7	300	300–600	230	d.c.	22″ x 36″ Brass Mill	Geared	1920	West Virginia Metal Products Co.	Farimont, W. Va.	W
8	300	300–600	230	d.c.	22″ x 36″ Brass Mill	Geared	1920	West Virginia Metal Products Co.	Fairmont, W. Va.	W
9	300	300	2200	60 cy.	26″ Cold Mill	Coupled	1921	International Nickel Co.	Huntington, W. Va.	AC
10	300	435	2200	60 cy.	24″ x 48″ Copper Mill	Geared	1920	West Virginia Metal Products Co.	Fairmont, W. Va.	W
11	300	435	2200	60 cy.	18″ Copper Mill	Geared	1920	West Virginia Metal Products Co.	Fairmont, W. Va.	W
12	300	500		60	Brass Mill	Coupled	1917	British American Metals Co.	Plainfield, N. J.	CW
13	300	514	440	60 cy.	Brass Mill	Geared	1915	Chase Metal Works	Waterbury, Conn.	GE
14	300	514	550	60 cy.	Brass Sheet Mill	Geared	1919	American Brass Company	Hastings, N. Y.	GE
15	300	585	440	60 cy.	18″ Copper (Rough.) Mill	Chain	1916	Standard Underground Cable Co.	Perth Amboy, N. J.	W
16	300	600	2200	60 cy.	Brass Mill	Geared	1915	Chase Metal Works	Waterbury, Conn.	GE
17	300	600	440	60 cy.	Brass Mill	Geared	1919	Bristol Brass Co.	Bristol, Conn.	GE
18	300	600	440	60 cy.	Brass Mill		1920	Detroit Copper & Brass Co.	Detroit, Mich.	AC
19	300	600	440	60	Copper Strip Mill	Geared	1925	Detroit Copper & Brass Co.	Detroit, Mich.	CW
20	350	250	440	25 cy.	Brass Mill	Geared	1921	Harrison Radiator Corp.	Lockport, N. Y.	GE
21	350–350	275–470	375	d.c.	Reversing Copper Mill	Geared	1920	American Brass Co.	Buffalo, N. Y.	GE
22	350–350	275–470	375	d.c.	Reversing Copper Mill	Geared	1920	American Brass Co.	Buffalo, N. Y.	GE
23	350–350	275–470	375	d.c.	Reversing Copper Mill	Geared	1920	American Brass Co.	Kenosha, Wis.	GE
24	350–350	275–470	375	d.c.	Reversing Copper Mill	Geared	1922	Taunton-New Bedf'd Copper Co.	Taunton, Mass.	GE
25	350	400	2200	60 cy.	Wire Rod Mill	Geared	1918	Taunton New Bedf'd Copper Co.	New Bedford, Mass.	AC
26	350	400	2200	60 cy.	Wire Rod Mill	Coupled	1918	Taunton New Bedf'd Copper Co.	New Bedford, Mass.	AC
27	350	400	2200	60 cy.	Wire Rod Mill	Coupled	1918	Taunton New Bedf'd Copper Co.	New Bedford, Mass.	AC
28	350	490	2200	25 cy.	Brass Mill	Geared	1920	American Brass Co.	Buffalo, N. Y.	W
29	350	490	2200	25 cy.	Brass Mill	Geared	1920	American Brass Co.	Buffalo, N. Y.	W
30	400	350	440	60 cy.	9″ Copper (Fin.) Mill	Direct	1916	Standard Underground Cable Co.	Perth Amboy, N. J.	W
31	400	352	2200	60 cy.	Copper Rod Mill	Geared	1923	American Brass Company	Kenosha, Wis.	W
32	400	360	2200	60 cy.	Brass Mill	Geared	1917	American Brass Co.	Waterbury, Conn.	GE
33	400	360	2200	60 cy.	Brass Mill	Geared	1917	American Brass Co.	Waterbury, Conn.	GE
34	400	360	2200	60 cy.	Brass Mill	Geared	1921	American Brass Co.	Torrington, Conn.	GE
35	400	360	2200	60 cy.	Brass Mill	Geared	1921	American Brass Co.	Torrington, Conn.	GE
36	400	435	2200	60 cy.	Aluminum Mill	Geared	1918	U. S. Aluminum Co.	New Kensington, Pa.	W
37	400	435	2200	60 cy.	Aluminum Mill	Geared	1918	U. S. Aluminum Co.	New Kensington, Pa.	W
38	400	435	2200	60 cy.	Aluminum Mill	Geared	1919	U. S. Aluminum Co.	Edgewater, N. J.	W
39	400	440	2200	60 cy.	Copper Rod Mill	Geared	1923	American Brass Company	Kenosha, Wis.	W
40	400	450	2200	60 cy.	Brass Mill	Geared	1917	American Brass Company	Waterbury, Conn.	GE
41	400	450	440	60 cy.	Brass Sheet Mill	Geared	1920	Detroit Copper & Brass Co.	Detroit, Mich.	GE
42	400	450	440	60 cy.	Sheet Mill	Geared	1924	New Jersey Zinc Co.	Palmerton, Pa.	GE
43	400	450	440	60 cy.	Sheet Mill	Geared	1924	New Jersey Zinc Co.	Palmerton, Pa.	GE
44	400	514	2200	60 cy.	Brass Tubes	Geared	1915	American Brass Co.	Waterbury, Conn.	GE
45	400	514	2200	60 cy.	Brass Tubes	Geared	1915	American Brass Co.	Waterbury, Conn.	GE
46	400	514	440	60 cy.	16″ Copper Bar Mill	Geared	1916	Waclark Wire Co.	Elizabeth, N. J.	GE
47	400	514	2200	60 cy.	Brass Mill	Geared	1922	Western Cartridge Co.	East Alton, Ill.	GE
48	400	514	2200	60 cy.	20″ Flat Mill	Geared	1915	American Brass Company	Kenosha, Wis.	AC
49	400	514	2200	60 cy.	24″ Roughing Mill	Geared	1915	American Brass Company	Kenosha, Wis.	AC
50	400	514	2200	60 cy.	18″ Bar Mill	Geared	1915	American Brass Company	Kenosha, Wis.	AC
51	400	575	440	60 cy.	Sheet Copper Rolling Mill	Geared	1923	American Metal Products Co.	Milwaukee, Wis.	W
52	400	600	440	60 cy.	Brass Mill	Geared	1917	Rome Brass & Copper Co.	Rome, N. Y.	GE
53	400	600	2200	60 cy.	Brass Mill	Geared	1921	American Brass Co.	Torrington, Conn.	GE
54	400	600	2200	60 cy.	Zinc Mill	Geared	1922	Ball Bros. Glass Co.	Muncie, Ind.	GE
55	400	600	2200	60	Brass Rolling Mill	Geared	1925	American Brass Co.	Torrington, Conn.	GE
56	400	720	2200	60 cy.	Copper Mill	Geared	1920	Rome Wire Co.	Rome, N. Y.	GE
57	400	720	550	60 cy.	Copper Mill	Geared	1920	Phillips Wire Co.	Pawtucket, R. I.	GE
58	400–200	800–400	230	d.c.	Copper Sheet Mill	Geared	1925	Rome Brass & Copper Co.	Rome, N. Y.	GE
59	400	900	550	60 cy.	Brass Mill	Geared	1920	American Brass Company	Ansonia, Conn.	GE
60	400	900	550	60 cy.	Brass Mill	Geared	1920	American Brass Company	Ansonia, Conn.	GE
61	400	900	550	60 cy.	Brass Mill	Geared	1920	American Brass Company	Ansonia, Conn.	GE
62	400	900	550	60 cy.	Brass Mill	Geared	1920	American Brass Company	Ansonia, Conn.	GE
63	400	900	550	60 cy.	Brass Mill	Geared	1921	American Brass Company	Ansonia, Conn.	GE
64	450	200–400	230	d.c.	Zinc Sheet Mill 26″ x 72″	Geared	1924	Illinois Zinc Co.	Peru, Illinois	W
65	450	500	440	60 cy.	Brass Mill	Geared	1918	Michigan Copper & Brass Co.	Detroit, Mich.	W
66	450	550–750	230	d.c.	Zinc Rolls	Coupled	1924	Mattheisen Hegeler Zinc Co.	LaSalle, Ill.	CW
67	450	550–750	230	d.c.	Zinc Strip Mills	Geared	1925	Mattheisen & Hegeler Zinc Co.	LaSalle, Ill.	CW
68	450	600	550	60 cy.	Copper Rod Mill	Geared	1920	Phillips Wire Co.	Pawtucket, R. I.	GE
69	450	870	440	60 cy.	Copper Clad Mill	Geared	1915	Duplex Metal Co.	Philadelphia, Pa.	W
70	500	0–200	500	d.c.	78″ Rev. Brass Plate Mill	Geared	1920	West Virginia Metal Products Co.	Fairmont, W. Va.	W
71	500	220–400	550	d.c.	Brass Mill	Geared	1913	Scoville Manufacturing Co.	Waterbury, Conn.	W
72	500	220–400	550	d.c.	Brass Mill	Geared	1913	Scoville Manufacturing Co.	Waterbury, Conn.	W
73	500	220–400	550	d.c.	Brass Mill	Geared	1913	Scoville Manufacturing Co.	Waterbury, Conn.	W
74	500	220–400	550	d.c.	Brass Mill	Geared	1913	Scoville Manufacturing Co.	Waterbury, Conn.	W
75	500	220–400	500	d.c.	Brass Mill	Geared	1913	Scoville Manufacturing Co.	Waterbury, Conn.	W
76	500	290	2200	25 cy.	Brass Mill	Geared	1920	American Brass Company	Buffalo, N. Y.	W
77	500	360	2200	60 cy.	Tube Mill	Geared	1915	American Brass Company	Waterbury, Conn.	GE
78	500	360	2200	60 cy.	Copper Mill	Geared	1917	Anaconda Copper Mining Co.	Black Eagle, Mont.	GE

ALUMINUM, BRASS, COPPER AND NON-FERROUS MILL DRIVES—Continued

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
79	500	360	440	60 cy.	Brass Mill	Direct	1923	Rome Brass & Copper Co.	Rome, N. Y.	GE
80	500	360	440	60 cy.	Brass Mill	Direct	1923	Rome Brass & Copper Co.	Rome, N. Y.	GE
81	500	360–612	600	d.c.	Reversing Hot Mill	Geared	1925	Michigan Copper & Brass Co.	Detroit, Mich.	GE
82	500	365	440	25 cy.	Copper Rolling Mill	Rope	1922	Baltimore Cop. Smelt. & Roll. Co.	Baltimore, Md.	W
83	500	368	2200	25 cy.	Brass Mill	Geared	1920	American Brass Company	Buffalo, N. Y.	W
84	500	375	2300	25		Geared	1925	Buffalo Copper & Brass Co.	Buffalo, N. Y.	AC
85	500	440	2200	60 cy.	Copper Rod Mill	Geared	1923	American Brass Company	Kenosha, Wis.	W
86	500	450	2200	50 cy.	Brass Mill	Geared	1915	Scoville Manufacturing Co.	Waterbury, Conn.	GE
87	500	450	2200	60 cy.	Brass Mill	Geared	1915	Scoville Manufacturing Co.	Waterbury, Conn.	GE
88	500	450	2200	50 cy.	Brass Mill	Geared	1915	Scoville Manufacturing Co.	Waterbury, Conn.	GE
89	500	450	2200	60 cy.	Brass Mill	Geared	1915	Chase Metal Works	Waterbury, Conn.	GE
90	500	450	440	60 cy.	20″ Copper Mill	Geared	1916	Waclark Wire Co.	Elizabeth, N. J.	GE
91	500	450	2200	60 cy.	Copper Mill	Geared	1917	Anaconda Copper Mining Co.	Black Eagle, Mont.	GE
92	500	450	2200	60 cy.	Copper Mill	Geared	1917	Anaconda Copper Mining Co.	Black Eagle, Mont.	GE
93	500	450	2200	60 cy.	Brass Mill	Geared	1917	American Brass Company	Waterbury, Conn.	GE
94	500	450	2200	60 cy.	Brass Mill	Geared	1917	American Brass Company	Waterbury, Conn.	GE
95	500	450	440	60 cy.	Brass Sheet Mill	Geared	1920	Detroit Copper & Brass Co.	Detroit, Mich.	GE
96	500	450	2200	60 cy.	Brass Mill	Geared	1921	American Brass Company	Torrington, Conn.	GE
97	300	450	2200	60 cy.	Brass Mill	Geared	1921	American Brass Company	Torrington, Conn.	GE
98	500	450	2200	50 cy.	14″ Roughing Mill	Geared	1920	International Nickel Co.	Huntington, W. Va.	AC
99	500	450	2200	60 cy.	9″ Finishing Mill	Geared	1920	International Nickel Co.	Huntington, W. Va.	AC
100	500	450	440	60	20″ Copper Mill	Coupled	1918	Waclark Wire Company	Bayway, N. J.	CW
101	500	450	2200	60	Copper Mill	Direct	1925	Anaconda Copper Mining Co.	Black Eagle, Mont.	GE
102	500	500	2200	25	Experimental Alum.	Geared	1925	U. S. Aluminum Co.	Massena, N. Y.	GE
103	500	514	550	60 cy.	18″ Copper Mill	Geared	1919	American Brass Co.	Hastings, N. Y.	GE
104	500	514	2200	60 cy.	Brass Mill	Geared	1922	Western Cartridge Co.	East Alton, Ill.	GE
105	500	575	2200	60 cy.	Copper Rod Mill	Geared	1923	American Brass Company	Kenosha, Wis.	W
106	500	600	2200	50 cy.	Brass Mill	Geared	1917	American Brass Company	Waterbury, Conn.	GE
107	500	600	2200	50 cy.	Brass Mill	Geared	1917	American Brass Company	Waterbury, Conn.	GE
108	500	600	2200	50 cy.	Brass Mill	Geared	1917	American Brass Company	Torrington, Conn.	GE
109	500	600	2200	50 cy.	Copper Rod Mill	Geared	1922	E. F. Phillips Electrical Works, Ltd.	Montreal, Que.	W
110	500	600	2200	60 cy.	Copper Rolling Mill	Geared	1923	American Brass Company	Torrington, Conn.	GE
111	600	300	440	25 cy.	Tandem Plate Mill	Rope	1920	Baltimore Copper S. & R. Co.	Baltimore, Md.	AC
112	600	300	440	25 cy.	Tandem Plate Mill	Rope	1920	Baltimore Copper S. & R. Co.	Baltimore, Md.	AC
113	600	300	550	60	Copper Rod Mill	Direct	1926	American Brass Co.	Ansonia, Conn.	GE
114	600	360–400	500	d.c.	Aluminum Mill	Geared	1919	U. S. Aluminum Co.	Marysville, Tenn.	W
115	600	360–440	500	d.c.	Aluminum Mill	Geared	1919	U. S. Aluminum Co.	Marysville, Tenn.	W
116	600	360–440	500	d.c.	Aluminum Mill	Geared	1919	U. S. Aluminum Co.	Marysville, Tenn.	W
117	600	360	440	50 cy.	Copper Mills	Geared	1923	Am. Insulated Wire & Cable Co.	Chicago, Ill.	GE
118	600	360	550	60	Copper Rod Mill	Direct	1926	American Brass Co.	Ansonia, Conn.	GE
119	600	450	2200	50 cy.	Aluminum Strip Mill	Geared	1914	Cleveland Metal Products Co.	Cleveland, Ohio	GE
120	600	500	575	25 cy.	Brass Sheet Mill	Geared	1920	Baltimore Tube Co.	Baltimore, Md.	GE
121	600	500	575	25 cy.	Brass Sheet Mill	Geared	1920	Baltimore Tube Co.	Baltimore, Md.	GE
122	600	514	2200	60 cy.	Brass Mill	Geared	1922	Western Cartridge Co.	East Alton, Ill.	GE
123	600	600	4000	60 cy.	Brass Mill	Geared	1919	Bristol Brass Co.	Bristol, Conn.	GE
124	600	600	2200	60 cy.	Copper Mill	Geared	1920	American Brass Co.	Waterbury, Conn.	GE
125	600	600	2200	60 cy.	Brass Mill	Geared	1921	American Brass Company	Waterbury, Conn.	GE
126	600	600	550	50	Copper Rod Mill	Geared	1925	Phillips Wire Co.	Pawtucket, R. I.	GE
127	600	900	440	50 cy.	Copper Rod Mill	Geared	1920	Western Electric Co.	Hawthorne, Ill.	GE
128	600	900	550	50 cy.	Brass Mill	Geared	1920	American Brass Company	Ansonia, Conn.	GE
129	600	900	440	60 cy.	Copper Mill	Geared	1923	Am. Insulated Wire & Cable Co.	Chicago, Ill.	GE
130	700	360	440	60 cy.	Brass Mill	Chain		Detroit Copper & Brass Co.	Detroit, Mich.	AC
131	700	585	2200	50 cy.	Copper Rod Mill	Geared	1923	Eugene F. Phillips Elec.Works,Ltd	Montreal, Que.	W
132	700	735	440	25 cy.	Copper Rolling Mill	Geared	1924	Baltimore Cop. Smelt. & Roll. Co.	Baltimore, Md.	W
133	700	735	440	25 cy.	Copper Rolling Mill	Geared	1924	Baltimore Cop. Smelt. & Roll. Co.	Baltimore, Md.	W
134	700	735	440	25 cy.	Copper Rolling Mill	Geared	1924	Baltimore Cop. Smelt. & Roll. Co.	Baltimore, Md.	W
135	750	353	4600	60 cy.	Brass Mill	Geared	1924	Scoville Manufacturing Co.	Waterbury, Conn.	W
136	750	514	550	60 cy.	10″ and 9″ Copper Mills	Geared	1919	American Brass Company	Hastings, N. Y.	GE
137	750	514	550	60 cy.	10″ and 9″ Copper Mills	Geared	1919	American Brass Company	Hastings, N. Y.	GE
138	750	600	4000	60 cy.	Brass Mill	Geared	1919	Bristol Brass Co.	Bristol, Conn.	GE
139	750	720	2200	60 cy.	Zinc Rolling Mill	Geared	1923	American Zinc Products Co.	Greencastle, Ind.	GE
140	750	720	550	50	Brass Rolling Mill	Geared	1925	American Brass Co.	Ansonia, Conn.	GE
141	800	350	2200	60 cy.	Aluminum Mill	Geared	1915	U. S. Aluminum Co.	Edgewater, N. J.	W
142	800	353	440	50 cy.	8″ Copper Rod Mill	Direct	1923	Standard Underground Cable Co.	St. Louis, Mo.	W
143	800	360–440	500	d.c.	Aluminum Mill	Geared	1919	U. S. Aluminum Co.	Marysville, Tenn.	W
144	800	360–440	500	d.c.	Aluminum Mill	Geared	1919	U. S. Aluminum Co.	Marysville, Tenn.	W
145	800	370	650	d.c.	Aluminum Mill	Direct	1917	U. S. Aluminum Co.	Niagara Falls, N. Y.	W
146	800	370–400	650	d.c.	Aluminum Mill	Direct	1919	U. S. Aluminum Co.	Niagara Falls, N. Y.	W
147	800	443	2200	60 cy.	Roughing Mill	Coupled	1920	International Nickel Co.	Huntington, W. Va.	AC
148	800	450	2200	60 cy.	14″ Merchant Mill	Geared	1920	International Nickel Co.	Huntington, W. Va.	AC
149	800–400	450–225	2200	60	Copper Mill	Direct	1925	Anaconda Copper Mining Co.	Mont.	GE
150	800	720	4600	60	Rolling Mill	Geared	1925	Michigan Copper & Brass Co.	Detroit, Mich.	AC
151	800	720	4600	60	Rolling Mill	Geared	1925	Michigan Copper & Brass Co.	Detroit, Mich.	AC
152	800	720	4600	50	Rolling Mill	Geared	1925	Michigan Copper & Brass Co.	Detroit, Mich.	AC
153	800	720	4600	50	Rolling Mill	Geared	1925	Michigan Copper & Brass Co.	Detroit, Mich.	AC
154	800	720	4600	50	Rolling Mill	Geared	1925	Michigan Copper & Brass Co.	Detroit, Mich.	AC
155	800	870	2200	60 cy.	Copper Rod Mill	Geared	1923	American Brass Company	Kenosha, Wis.	W
156	800	870	3200	60 cy.	Copper Rod Mill	Geared	1923	American Brass Company	Kenosha, Wis.	W
157	800	900	440	60 cy.	Copper Rod Mill	Geared	1920	Western Electric Co.	Hawthorne, Ill.	GE
158	900	900	440	60 cy.	Copper Rod Mill	Geared	1920	Western Electric Co.	Hawthorne, Ill.	GE
159	1000	300	2200	25 cy.	Aluminum Rod Mill	Geared	1922	U. S. Aluminum Co.	Massena, N. Y.	GE
160	1000	450	2200	60 cy.	20″ Merchant Mill	Geared	1920	International Nickel Co.	Huntington, W. Va.	AC
161	1000	600	2300	60	Copper Mill	Geared	1925	American Copper Products Co.	Elizabeth, N. J.	GE
162	1200	360	2200	60 cy.	24″ Bar Mill	Geared	1920	International Nickel Co.	Huntington, W. Va.	AC
163	1200	360	2200	60 cy.	30″ Sheet Mill	Geared	1920	International Nickel Co.	Huntington, W. Va.	AC
164	1200	400	650	d.c.	Aluminum Plate Mill	Geared	1915	Aluminum Company of America	Niagara Falls, N. Y.	GE
165	1350	600	2300	60 cy.	Copper Mill	Geared	1918	American Brass Company	Waterbury, Conn.	GE

REVERSING MILL DRIVES

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	350	275–470	375	d.c.	Reversing Copper Mill	Geared	1920	American Brass Company	Buffalo, N. Y.	GE
2	350	275–470	375	d.c.	Reversing Copper Mill	Geared	1920	American Brass Company	Buffalo, N. Y.	GE
3	350	275–470	375	d.c.	Reversing Copper Mill	Geared	1920	American Brass Company	Kenosha, Wis.	GE
4	350	275–470	375	d.c.	Reversing Copper Mill	Geared	1922	Taunton-New Bedford Copper Co.	Taunton, Mass.	GE
5	400	20	230	d.c.	32 x 48 Plate Mill	Coupled	1910	American Sheet & Tin Plate Co.	Gary, Ind.	CW
6	400	20	230	d.c.	32 x 48 Plate Mill	Coupled	1910	American Sheet & Tin Plate Co.	Gary, Ind.	CW
7	400	20	230	d.c.	32 x 48 Plate Mill	Coupled	1910	American Sheet & Tin Plate Co.	Gary, Ind.	CW
8	400	20	230	d.c.	32 x 48 Plate Mill	Coupled	1910	American Sheet & Tin Plate Co.	Gary, Ind.	CW
9	500	-200	500	d.c.	78″ Rev. Brass Plate Mill	Geared	1920	West Virginia Metal Products Co.	Fairmont, W. Va.	W

REVERSING MILL DRIVES—Continued

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
10	500	360–612	600	d.c.	Reversing Hot Mill	Geared	1925	Michigan Copper & Brass Co.	Detroit, Mich.	GE
11	700	86	450	d.c.	Shear Intensifier	Direct	1918	Tennessee Coal, Iron & R. R. Co.	Fairfield, Ala.	GE
12	800	37–70	500	d.c.	Plate Mill	Coupled		Universal Rolling Mill Co.	Bridgeville, Pa.	AC
13	1000	50–100	600	d.c.	24″ Billet (Roughing)	Direct	1916	American Steel & Wire Co.	Cleveland, Ohio	W
14	1000	50–175	600	d.c.	24″ Mill	Direct	1916	Central Steel Co.	Massillon, Ohio	W
15	1200	25–50	330	d.c.	Reversing Plate Mill	Direct	1926	Lukens Steel Co.	Coatesville, Pa.	GE
16	1750	70–120	600	d.c.	20″ Billet Mill	Direct	1916	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
17	1800	–40	600	d.c.	84″ Rev. Shrd. Plate Mill	Direct	1919	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
18	2000	50–100	600	d.c.	30″ Bar Mill	Direct	1919	Follansbee Brothers Co.	Toronto, O.	W
19	2000	0–57–163	700	d.c.	52″ Struct. Edging Mill	Direct	1926	Carnegie Steel Co.	Homestead, Pa.	W
20	2000	0–57–163	700	d.c.	52″ Struct. Edging Mill	Direct	1926	Carnegie Steel Co.	Homestead, Pa.	W
21	2100	50–125	700	d.c.	42″ Universal Plate Mill	Direct	1916	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
22	2100	47–120	700	d.c.	34″ Blooming Mill	Direct	1916	Penn Seaboard Steel Corporation	New Castle, Del.	W
23	2150	50–100	535	d.c.	Reversing Bar Mill	Direct	1926	Standard Seamless Tube Co.	Economy, Pa.	GE
24	2200	50–120	600	d.c.	40″ Universal Plate Mill	Direct	1919	Dominion Foundrys & Steel Co.	Hamilton, Ont.	W
25	2200	70–150	600	d.c.	28″ Blooming Mill	Direct	1920	Atlantic Steel Co.	Atlanta, Ga.	W
26	2500	53–80	660	d.c.	Reversing Plate Mill	Direct	1926	Lukens Steel Co.	Coatesville, Pa.	GE
27	2900	47–120	700	d.c.	34″ Blooming Mill	Direct	1917	Sharon Steel Hoop Co.	Youngstown, Ohio	W
28	3000	70–150	750		24″ Reversing Bar Mill	Direct	1925	Inland Steel Co.	Indiana Harbor, Ind.	GE
29	3100	70–150	600	d.c.	Universal Plate Mill	Direct	1925	International Harvester Co	Chicago, Ill.	W
30	3200	50–120	700	d.c.	34″ Struct. (Rough.) Mill	Direct	1915	Inland Steel Co.	Indiana Harbor, Ind.	W
31	3200	50–120	700	d.c.	28″ Struct. (Fin.) Mill	Direct	1915	Inland Steel Co.	Indiana Harbor, Ind.	W
32	3250	50–120	500	d.c.	36″ Blooming Mill	Direct	1916	Am. Rolling Mill Co.	Ashland, Ky.	GE
33	3250	50–120	500	d.c.	34″ Blooming Mill	Direct	1916	Keystone Steel & Wire Co.	Peoria, Ill.	GE
34	3500	70–100	525	d.c.	32″ Blooming Mill	Direct	1913	Steel Company of Canada	Hamilton, Ont.	W
35	3500	50– 75	700	d.c.	34″ Blooming Mill	Direct	1914	Central Steel Co.	Massillon, Ohio	W
36	3500	50–120	700	d.c.	35″ Roughing Struct. Mill	Direct	1924	Bethlehem Steel Corp.	Lackawanna, N. Y.	W
37	3500	50–120	700	d.c.	34″ Blooming Mill	Direct	1925	Kokomo Steel & Wire Co.	Kokomo, Ind.	W
38	3500	50–120	700	d.c.	36″ Blooming Mill	Direct	1925	Phoenix Iron Co.	Phoenixville, Pa.	W
39	3600	40– 90	600	d.c.	35″ Blooming Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	W
40	3600	40– 90	600	d.c.	40″ Blooming Mill	Direct	1917	Illinois Steel Co.	Gary, Ind.	W
41	4000	0–150	575	d.c.	36″ Univ. Plate Mill	Direct	1905	Illinois Steel Co.	South Chicago, Ill.	W
42	4000	50–120	700	d.c.	34″ Blooming Mill	Direct	1924	Donner Steel Co.	Buffalo, N. Y.	GE
43	4000	58–140	750	d.c.	34″ Rev. Blooming Mill	Direct	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
44	4000	80–135	650	d.c.	30″ Univ. Skelp Mill	Direct	1922	Youngstown Sheet & Tube Co.	Youngstown, Ohio	GE
45	4000	0– 80	1200	d.c.	34″ Blooming Mill	Coupled		Algoma Steel Co.	Sault Ste. Marie,Can.	AC
46	5000	40–120	600	d.c.	40″ Blooming Mill	Direct	1916	National Tube Co.	Lorain, Ohio	W
47	5000	40–120	600	d.c.	35″ Blooming Mill	Direct	1916	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
48	5000	40–120	600	d.c.	35″ Blooming Mill	Direct	1915	United Alloy Steel Corporation	Canton, Ohio	W
49	5000	50–120	700	d.c.	36″ Rev. Roughing Struct.	Direct	1924	Carnegie Steel Co.	Homestead, Pa.	W
50	5000	70–150	900	d.c.	27″ Rev. Hot Strip Mill	Direct	1926	Columbia Steel Co.	Butler, Pa.	GE
51	5000	75–100	700	d.c.	48″ Universal Plate Mill	Direct	1923	Bethlehem Steel Co.	Lackawanna, N. Y.	W
52	5000	75–150	700	d.c.	28″ Fin. Structural Mill	Direct	1924	Bethlehem Steel Corp.	Lackawanna, N. Y.	W
53	6000	40–120	600	d.c.	44″ Blooming Mill	Direct	1919	Bethlehem Steel Co.	Steelton, Pa.	W
54	6500	40–120	600	d.c.	40″ Blooming Mill	Direct	1915	Inland Steel Co.	Indiana Harbor, Ind.	W
55	6500	50–120	600	d.c.	36″ Blooming Mill	Direct	1916	Trumbull Steel Co.	Warren, Ohio	GE
56	6500	50–120	600	d.c.	40″ Blooming Mill	Direct	1916	Bethlehem Steel Co.	Sparrows Point, Md.	GE
57	6500	50–120	600	d.c.	40″ Blooming Mill	Direct	1922	Otis Steel Co.	Cleveland, Ohio	GE
58	7000	40–120	700	d.c.	Blooming Mill	Coupled	1925	Illinois Steel Co.	So. Chicago, Ill.	AC
59	7000	50–100	700	d.c.	60″ Universal Plate Mill	Direct	1919	Bethlehem Steel Co.	Sparrows Point, Md.	W
60	7000	50–100	650		46″ Slabbing Mill	Direct	1925	Bethlehem Steel Co.	Sparrows Point, Md.	GE
61	7000	50–120	700	d.c.	40″ Rev. Blooming Mill	Direct	1923	Bethlehem Steel Co.	Lackawanna, N. Y.	W
62	7000	50–120	700	d.c.	44″ Blooming Mill	Direct	1924	Carnegie Steel Co.	Homestead, Pa.	W
63	7000	50–120	700	d.c.	40″ Blooming Mill	Direct	1924	International Harvester Co. Wisconsin Steel Works	Chicago, Ill.	W
64	7000	50–120	700	d.c.	36″ Rev. Rougher Mill	Direct	1925	Inland Steel Co.	Indiana Harbor, Ind.	W
65	7000	0–50–120	700	d.c.	40″ Rev. Blooming Mill	Direct	1926	Forged Steel Wheel Co.	Butler, Pa.	W
66	7000	50–150	700	d.c.	52″ Structural Mill	Direct	1925	Carnegie Steel Co.	Homestead, Pa.	W
67	7000	50–150	700	d.c.	52″ Structural Mill	Direct	1925	Carnegie Steel Co.	Homestead, Pa.	W
68	7000	55–120	900	d.c.	45″ Blooming Mill	Direct	1917	Tennessee Coal, Iron & R. R. Co.	Fairfield, Ala.	GE
69	8000	40–120	700	d.c.	54″ Blooming Mill	Direct	1925	Carnegie Steel Co.	Homestead, Pa.	W
70	8000	150	600	d.c.	28″ Rail Mill	Direct	1917	Bethlehem Steel Co.	Lackawanna, N. Y.	GE

A. C. SPEED SETS

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	300–300	187.5–112.5	2200	25 cy.	12″ Merchant Mill	Direct	1914	Bethlehem Steel Co.	Lebanon, Pa.	GE
2	300–300	187.5–112.5	2200	25 cy.	12″ Merchant Mill	Direct	1914	Bethlehem Steel Co.	Lebanon, Pa.	GE
3	300–300	300–180	2200		10″ Merchant Mill	Direct	1914	Bethlehem Steel Co.	Lebanon, Pa.	GE
4	300–225–165	335–225–165	6600		12″ Hot Strip Mill	Geared	1920	Illinois Steel Co.	Gary, Ind.	GE
5	300–300	500–300	2200		9″ Merchant Mill	Direct	1914	Bethlehem Steel Co.	Lebanon, Pa.	GE
6	300–300	500–300	2200		8″ Merchant Mill	Direct	1914	Bethlehem Steel Co.	Lebanon, Pa.	GE
7	300–150	590–292	2200	60 cy.	9″ Merchant Mill	Geared	1920	Cleveland Hardware Co.	Cleveland, Ohio	W
8	350–235	300–200	6600		Merchant Mill	Geared	1920	Illinois Steel Co.	Gary, Ind.	GE
9	350–350	360–240	440	60 cy.	Bar Mill	Coupled		Simmons Mfg. Co.	Kenosha, Wis.	AC
10	400–400	107– 64	2200		16″ Bar Mill	Direct	1914	Bethlehem Steel Co.	Lebanon, Pa.	GE
11	400	720–450	2200	60 cy.	Bar Mill	Geared		Cyclops Steel Co.	Titusville, Pa.	AC
12	450	352–230	2200	60 cy.	8″ Merchant Mill	Direct	1919	Bourne-Fuller Co.	Cleveland, Ohio	W
13	450–360	440–350	2200	60 cy.	Cont. Hoop (Fin.) Mill	Direct	1920	Connors Steel Co.	Birmingham, Ala.	W
14	450–380	700–595	2200	60 cy.	Cont. Hoop (Fin.) Mill	Direct	1920	Connors Steel Co.	Birmingham, Ala.	W
15	450	730–490	4000	25 cy.	10″ Merchant Mill	Geared	1917	Atlas Steel Corporation	Dunkirk, N. Y.	W
16	500–385–250	130–100–65	440		14″ Merchant Mill	Direct	1923	Halcomb Steel Co.	Syracuse, N. Y.	GE
17	500–500	327–200	440		9″ Merchant Mill	Direct	1913	Bourne Fuller Co.	Cleveland, Ohio	GE
18	500–500–500	500–375–265	2200		10″ Merchant Mill	Direct & Belt	1916	Donner Steel Co.	Buffalo, N. Y.	GE
19	500	575–865	2200	60 cy.	10″ Merchant Mill	Geared	1921	International Nickel Co.	Huntington, W. Va.	W
20	500	575–865	2200	60 cy.	10″ Merchant Mill	Geared	1921	International Nickel Co.	Huntington, W. Va.	W
21	{500 / 250}	880–514 / 440–256	2200	60 cy.	10″ Merchant Mill	Geared	1919	Hunter Crucible Steel Co.	Cleveland, Ohio	W
22	500	888–540	6600	60 cy.	11″ Finishing Stand	Coupled		Tennessee Coal, Iron & R. R. Co.	Birmingham, Ala.	AC
23	550	320–206	2200	60 cy	10″ Hoop Mill	Direct	1917	Atlantic Steel Co.	Atlanta, Ga.	W
24	600–525	250–125	2200		16″ & 15″ Merchant Mill	Direct & Rope	1913	Bethlehem Steel Co.	Steelton, Pa.	GE
25	600–600	300–214	2200	25 cy.	Bar Mill	Coupled & Rope		St. Louis Screw Co.	St. Louis, Mo.	W
26	600	300–214	2200	25 cy.	Bar Mill	Chain		St. Louis Screw Co.	St. Louis, Mo.	W
27	600–400–200	321–214–107	440		9″ Merchant Mill	Direct	1923	Halcomb Steel Co.	Syracuse, N. Y.	GE
28	600–400	375–210	2200		9″ Merchant Mill	Direct	1912	Forged Steel Wheel Co.	Butler, Pa.	GE
29	600–600–600	469–375–281	2200		8″ Merchant Mill	Direct	1919	Donner Steel Co.	Buffalo, N. Y.	GE
30	600	585–325	500	40 cy.	16″ Merchant Mill	Geared	1917	Cohoes Rolling Mill Co.	Cohoes, N. Y.	W
31	600–500–400	600–500–400	2200		Merchant Mill, No. 19	Direct	1916	Bethlehem Steel Co.	Lackawanna, N. Y.	GE

A. C. SPEED SETS—Continued

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
32	600–600	720–360	6600	60 cy.	Hot Strip Mill	Geared		Weirton Steel Co.	Weirton, W. Va.	AC
33	700–600–400	400–300–200	2200	25 cy.	Merchant Mill, No. 10	Direct	1916	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
34	700–600–400	400–300–200	2200	25	Merchant Mill, No. 10	Belt	1916	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
35	700	485–290	2200	25 cy.	12″ Merchant Mill	Geared	1916	Halcomb Steel Co.	Syracuse, N. Y.	W
36	700	730–490	4000	25 cy.	14″ Merchant Mill	Geared	1916	Atlas Steel Corporation	Dunkirk, N. Y.	W
37	700	880–530	2200	60 cy.	10″ Finishing Mill	Geared	1923	Crucible Steel Co. of America, Park Works	Pittsburgh, Pa.	W
38	750–750	225–168	440	60 cy.	Bar Mill	Coupled		Simmons Mfg. Co.	Kenosha, Wis.	AC
39	750–625–460	360–300–220	6600		12″ Hot Strip Mill	Direct	1920	Illinois Steel Co.	Gary, Ind.	GE
40	750–600–440	473–375–278	6600		12″ Hot Strip Mill	Direct	1920	Illinois Steel Co.	Gary, Ind.	GE
41	770–700–630	540–490–440	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
42	800	225–150	2200	25 cy.	12″ Bar Mill	Direct	1919	Scullin Steel Co.	St. Louis, Mo.	W
43	800	590–292	6600	60 cy.	16″ Hoop and Band Mill	Geared	1915	Weirton Steel Co.	Weirton, W. Va.	W
44	800–400	360–180	550	60	Bar Mill	Geared	1926	Ludlum Steel Co.	Watervliet, N. Y.	GE
45	800–400	360–180	550	60	Bar Mill	Geared	1926	Ludlum Steel Co.	Watervliet, N. Y.	GE
46	800–800–800	720–600–480	2200		12″ Hot Strip	Geared	1920	Canadian Electric Steel Co.	Montreal, Canada	GE
47	800	730–365	2200	50 cy.	22″ Bar Mill	Geared	1916	Columbia Steel Co.	Los Angeles, Cal.	W
48	800	730–365	2200	50 cy.	12″ Merchant Mill	Geared	1916	Columbia Steel Co.	Los Angeles, Cal.	W
49	800	880–490	2200	60 cy.	16″ Bar Mill	Geared	1920	Knoxville Iron Co.	Knoxville, Tenn.	W
50	800	880–623	2200	60 cy.	20″ Mer. (Roughing) Mill	Geared	1918	Hoosier Rolling Mill Co.	Terre Haute, Ind.	W
51	840–700–560	360–300–240	6600	40	Merchant Mill	Direct	1925	Bethlehem Steel Co.	Bethlehem, Pa.	GE
52	850–570	214–143	6600		Merchant Mill	Direct	1920	Illinois Steel Co.	Gary, Ind.	GE
53	900–710–620	325–257–182	2300		10″ Hoop Mill	Geared	1918	Acme Steel Goods Co.	Riverdale, Ill.	GE
54	1000	209–150	6400	25 cy.	24″ Flat (Fin.) Mill	Direct	1916	American Steel & Wire Co.	Cleveland, Ohio	W
55	1000	225–168	4000	60	Rail Rerolling Mill	Direct	1926	Inland Steel Co.	Indiana Harbor, Ind.	GE
56	1000	225–168	4000	60	Rail Rerolling Mill	Direct	1926	Inland Steel Co.	Indiana Harbor, Ind.	GE
57	1000	292–150	2200	60 cy.	12″ Merchant Mill	Direct	1918	Central Steel Co.	Massillon, Ohio	W
58	1000	590–450	4000	60 cy.	14″ Merchant Mill	Geared	1920	Calumet Steel Co.	Chicago, Ill.	W
59	1000	590–450	4000	60 cy.	14″ Merchant Mill	Geared	1920	Calumet Steel Co.	Chicago, Ill.	W
60	1000	590–495	6600	60 cy.	24″ Structural Mill	Geared	1917	Tennessee Coal, Iron & R. R. Co.	Birmingham, Ala.	W
61	1100	294–295	2200	60 cy.	20″ Merchant Mill	Rope	1912	United Alloy Steel Corporation	Canton, Ohio	W
62	1125–900–675	312–250–187	6600	25	12″ Strip Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	GE
53	1190–875–525	350–250–150	2200	40	Merchant Mill	Direct-Rope	1925	Bethlehem Steel Co.	Lebanon, Pa.	GE
64	1180–955–705	560–450–336	2200		Rod Mill	Belt	1916	Keystone Steel & Wire Co.	Peoria, Ill.	GE
65	1200–1150–800	300–214–150	2200	25 cy.	Merchant Mill, No. 10	Geared	1916	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
66	1200–1000–800	300–250–200	4400	25 cy.	14″ Merchant Mill	Direct	1919	Buffalo Bolt Co.	N. Tonawanda, N. Y.	GE
67	1200–1000–800	450–375–300	6600	25 cy.	8″ Hoop Mill, No. 9	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
68	1200–1000–800	450–375–300	6600	25 cy.	8″ Bar Mill, No. 16	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
69	1200–1200–1200	450–360–270	2300		9″ Hot Strip Mill	Geared	1916	Trumbull Steel Co.	Warren, Ohio	GE
70	1200–1200–1200	450–360–270	2300		9″ Hot Strip Mill	Geared	1916	Trumbull Steel Co.	Warren, Ohio	GE
71	1200–1200–1200	450–360–270	2300		9″ Hot Strip Mill	Direct	1916	Trumbull Steel Co.	Warren, Ohio	GE
72	1200–1000–800	450–375–300	6600	25	8″ Hoop Mill, No. 8	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
73	1200–1000–800	450–375–300	6600	25	18″ Band Mill, No. 13	Geared	1919	Carnegie Steel Co.	Youngstown, Ohio	GE
74	1200	505–303	6600	60 cy.	16″ Hoop and Band Mill	Geared	1919	Weirton Steel Co.	Weirton, W. Va.	W
75	1200	590–441	2200	50 cy.	16″ Duo & Bull Head Mill	Geared	1916	Central Steel Co.	Massillon, Ohio	W
76	1200	590–407	2200	60 cy.	20″ Merchant (Fin.) Mill	Geared	1918	Hoosier Rolling Mill Co.	Terre Haute, Ind.	W
77	1250–1000–650	650–500–325	2200		Rod Mill	Belt	1916	Wickwire Spencer Steel Co.	Buffalo, N. Y.	GE
78	1250	712–430	6600	60 cy.	3 Stand 12″ Mill	Coupled		Tennessee Coal, Iron & R. R. Co.	Birmingham, Ala.	AC
79	1300–900	214–140	2200		12″ Merchant Mill	Direct	1912	Forged Steel Wheel Co.	Butler, Pa.	GE
80	1350–1000	214–161	4400	25	Rail Rerolling Mill	Direct	1926	Buffalo Steel Co.	Tonawanda, N. Y.	GE
81	1350–1000	214–161	4400	25	Rail Rerolling Mill	Direct	1926	Buffalo Steel Co.	Tonawanda, N. Y.	GE
82	1400–1400	600–405	2200		21″ Merchant Mill	Geared	1915	Union Rolling Mills Co.	Cleveland, Ohio	GE
83	1500	133–81.5	6600	25 cy.	18″ Structural Mill	Direct	1915	Bethlehem Steel Co.	Bethlehem, Pa.	W
84	1500	210–140	6600	25 cy.	18″ Bar Mill	Geared	1916	Carnegie Steel Co.	Duquesne, Pa.	W
85	1500–1250–875	300–250–175	2200	50	Merchant Mill	Direct	1925	Southern Calif. Iron & Steel Co.	Los Angeles, Cal.	GE
86	1500–1200–900	320–275–200	2200	60	10″ Merchant Mill	Geared	1925	Pacific Coast Steel Co.	So. San Fran., Cal.	GE
87	1500	322–193	2200	60	18″ Sheet Bar Mill	Geared	1926	Columbia Steel Co.	Pittsburgh, Calif.	W
88	1500–1250–1000	360–300–240	2200		28″ Rail Mill	Geared	1920	Bethlehem Steel Co.	Steelton, Pa.	GE
89	1500	365–244	6600	25 cy.	12″ Bar Mill	Rope	1916	Carnegie Steel Co.	Duquesne, Pa.	W
90	1500–1125	375–281	2200		10″ Merchant Mill	Geared	1916	Donner Steel Co.	Buffalo, N. Y.	GE
91	1500–1500	450–360	2300		16″ Hot Strip Mill	Geared	1916	Trumbull Steel Co.	Warren, Ohio	GE
92	1500–1200–900	468–375–281	6600	25	12″ Strip Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	GE
93	1500–1500	514–237	6600	60 cy.	Hot Strip Mill	Geared		Weirton Steel Co.	Weirton, W. Va.	AC
94	1500	514–257	6600	60 cy.		Coupled	1924	Weirton Steel Co.	Weirton, W. Va.	AC
95	1500	890–540	6600	60 cy.	4 Stand 12″ Mill	Coupled		Tennessee Coal, Iron & R. R. Co.	Birmingham, Ala.	AC
96	1600	440–500–540	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
97	1600	440–500–540	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
98	1650–1500–1350	413–375–337	6600		10″ Bar Mill, No. 10	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
99	1800–1500–1200	240–200–160	2300		10″ Hoop Mill	Belt	1918	Acme Steel Goods Co.	Riverdale, Ill.	GE
100	1800–1800–1800	370–300–247	6600		Sheet Bar Mill	Geared	1920	American Rolling Mill Co.	Ashland, Ky.	GE
101	1800–1500–1200	450–375–300	6600		10″ Hoop Mill, No. 11	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
102	1850–1450– 925	120– 94– 60	6600		16″ Hand Bar Mill	Direct	1921	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
103	2000–2000–2000	100–83.3–65	6600		12″ Structural Mill	Direct	1916	Bethlehem Steel Co.	Bethlehem, Pa.	GE
104	2000	234–161	2200	60 cy.	10″ Skelp (Fin.) Mill	Belted	1916	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
105	2000–2000	250–161	6600		10″ Skelp Mill	Geared	1915	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
106	2000	250–150	2200	60 cy.	Morgan Continuous Mill	Coupled		Interstate Iron & Steel Co.	Chicago, Ill.	AC
107	2000	350–234	2200	60 cy.	10″ Skelp (Rough.) Mill	Geared	1916	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
108	2000–2000–1600	450–360–270	2200		16″ Hot Strip Mill	Geared	1920	Trumbull Steel Co.	Warren, Ohio	GE
109	2000–2000–1600	450–360–270	2200		16″ Hot Strip Mill	Geared	1920	Trumbull Steel Co.	Warren, Ohio	GE
110	2000–2000–1600	450–360–270	2200		16″ Hot Strip Mill	Geared	1920	Trumbull Steel Co.	Warren, Ohio	GE
111	2000–1600–1200	625–500–375	6600	25	12″ Strip Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	GE
112	2000–1600–1200	625–500–375	6600	25	14″ Bar Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	GE
113	2070–1650–1205	235-187.5-137	6600		20″ Hot Strip Mill	Direct	1920	Illinois Steel Co.	Gary, Ind.	GE
114	2200–2000–1800	275–250–225	6600		10″ Bar Mill, No. 15	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
115	2200–2000–1800	275–250–225	6600	25	18″ Band Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	GE
116	2200	505–303	2200	60 cy.	18″ Bar Mill	Geared	1919	Central Steel Co.	Massillon, Ohio	W
117	2300–1300	115.4–65	6600		10″ Skelp Mill	Geared	1915	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
118	2360–1880–1440	410–327–250	2200		Rod Mill	Geared	1916	Keystone Steel & Wire Co.	Peoria, Ill.	GE
119	2470–1725–1235	430–300–215	2200		Rod Mill	Geared	1916	Wickwire Spencer Steel Co.	Buffalo, N. Y.	GE
120	2500	354–177	6600	60 cy.	16″ Hoop and Band Mill	Geared	1915	Weirton Steel Co.	Weirton, W. Va.	W
121	2750–2240–1750	262–214–167	6600		12″ Hot Strip Mill	Direct	1920	Illinois Steel Co.	Gary, Ind.	GE
122	2750–2500–2250	275–250–225	6600		14″ Bar Mill, No. 14	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
123	3000–3000–3000	155–144–130	6600		24″ Structural Mill	Direct	1917	Tennessee Coal, Iron & R. R. Co.	Fairfield, Ala.	GE
124	3000–2500–2000	300–250–200	6600		18″ Band Mill, No. 13	Direct	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
125	3000–2500–2000	300–250–200	6600		12″ Hoop Mill, No. 12	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
126	3000	354–212	2200	60 cy.	24″ Skelp Mill	Geared	1920	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
127	3000–2250–1500	500–375–250	2200	25	24″ Sheet Bar Mill	Geared	1926	Inland Steel Co.	Indiana Harbor, Ind.	GE
128	3000	505–300	2200	60 cy.	12″ Merchant Mill	Geared	1920	United Alloy Steel Corporation	Canton, Ohio	W
129	3600–1940	290–156	2200	60	21″ Cont. Sheet Bar and Skelp Mill	Geared	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE
130										
131	4500–4500	500–300	2200		14″ Merchant Mill	Geared	1923	Inland Steel Co.	Indiana Harbor, Ind.	GE
132	5000–4000–3000	450–360–270	2200	60	16″ Hot Strip Mill	Direct	1925	Trumbull Steel Co.	Warren, Ohio	GE
133	5500–4400–3400	170–136–105	6600		20″ Hot Strip Mill	Direct	1920	Illinois Steel Co.	Gary, Ind.	GE
134	5610–4500–3370	156-125-93.6	6600	25	12″ Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	GE
135	6700–5000–3320	500–375–250	6600	25	26″ x 21″ Cont. Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	GE
136	7500–4040	250–134	2200	60	21″ Cont. Sheet Bar and Skelp Mill	Geared	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE

DIRECT CURRENT ADJUSTABLE SPEED DRIVES

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	200-300	360-920	230		Merchant Mill	Direct	1919	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
2	300	175-225	600	d.c.	10" Merchant Mill	Direct	1926	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
3	300	267-800	230	d.c.	Hot Merchant Mill	Geared	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
4	300	267-800	230	d.c.	Hot Merchant Mill	Geared	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
5	300	267-800	230	d.c.	Hot Merchant Mill	Geared	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
6	300	300-400	230	d.c.	Cold Rolling Mill	Geared	1914	Trumbull Steel Co.	Warren, Ohio	W
7	300	300-600	230	d.c.	20" x 30" Brass Mill	Geared	1920	W. Va. Metal Products Co.	Fairmont, W. Va.	W
8	300	300-600	230	d.c.	20" x 30" Brass Mill	Geared	1920	W. Va. Metal Products Co.	Fairmont, W. Va.	W
9	300	300-600	230	d.c.	22" x 36" Brass Mill	Geared	1920	W. Va. Metal Products Co.	Fairmont, W. Va.	W
10	300	300-600	230	d.c.	22" x 36" Brass Mill	Geared	1920	W. Va. Metal Products Co.	Fairmont, W. Va.	W
11	300	300-400	230	d.c.	Cold Rolling	Geared	1920	Alan Wood, Iron & Steel Co.	Conshohocken, Pa	W
12	300	315-630	230		8" Merchant Mill	Direct	1919	Donner Steel Co.	Buffalo, N. Y.	GE
13	300	325-650	220	d.c.	Sheet Mill		1919	Aluminum Company of America	New Kensington, Pa.	AC
14	300	345-500	500	d.c.	Tube Rolling Mill	Geared	1912	Pittsburgh Steel Products Co.	Monessen, Pa.	W
15	300	350-450	230	d.c.	Merchant Bar Mill	Geared	1916	Carbon Steel Co.	Pittsburgh, Pa.	W
16	300	350-450	230	d.c.	Lap Welding Mill	Coupled	1923	Gary Tube Co.	Gary, Ind.	AC
17	300	400-800	230		Cold Strip Mill	Geared	1913	Weirton Steel Co.	Weirton, W. Va.	GE
18	300	400-800	230		Cold Strip Mill	Geared	1913	Weirton Steel Co.	Weirton, W. Va.	GE
19	300	400-800	230		Cold Strip Mill	Geared	1913	Weirton Steel Co.	Weirton, W. Va.	GE
20	300	400-800	230		Cold Strip Mill	Geared	1913	Weirton Steel Co.	Weirton, W. Va.	GE
21	300	400-800	230		20" Cold Strip Mill	Geared	1919	Trumbull Steel Co.	Warren, Ohio	GE
22	300	400-800	230		20" Cold Strip Mill	Geared	1919	Trumbull Steel Co.	Warren, Ohio	GE
23	300	400-800	230		20" Cold Strip Mill	Geared	1919	Trumbull Steel Co.	Warren, Ohio	GE
24	300	400-800	230		20" Cold Strip Mill	Geared	1919	Trumbull Steel Co.	Warren, Ohio	GE
25	300	400-800	230	d.c.	Edging Rolls	Geared	1926	Trumbull Steel Co.	Warren, Ohio	GE
26	300	450-750	230	d.c.	Wheel Mill	Geared		Bethlehem Steel Co.	Johnstown, Pa.	AC
27	300	450-750	230	d.c.	Wheel Mill	Geared		Bethlehem Steel Co.	Johnstown, Pa.	AC
28	320	400-800	230	d.c.	Cold Strip Drive	Geared	1926	International Nickle Co.	Huntington, W. Va.	AC
29	350	200-300	250	d.c.	9" Merchant Mill	Direct	1919	Natl. Farming Machinery, Ltd.	Montmagny, P. Q.	W
30	350	240-360	240		10" Merchant Mill	Direct	1911	LaClede Steel Co.	St. Louis, Mo.	GE
31	350	240-480	240		10" Merchant Mill	Direct	1923	LaClede Steel Co.	St. Louis, Mo.	GE
32	350	250-325	230	d.c.	9" Merchant Mill	Direct	1921	Wayne Steel Company	Erie, Pa.	W
33	350	300-425	230	d.c.	8" Rod Mill	Direct	1915	United Alloy Steel Corporation	Canton, Ohio	W
34	350	360-450	230		Welding Rolls	Direct	1920	National Tube Company	Lorain, Ohio	GE
35	350	360-450	230		Welding Rolls	Direct	1920	National Tube Company	Lorain, Ohio	GE
36	350	450-600	230	d.c.	Band Mill	Direct	1926	Sharon Steel Hoop Co.	Sharon, Pa.	CW
37	350	500	230	d.c.	16" Cont. Skelp Mill	Geared	1924	Gary Tube Co.	Gary, Ind.	AC
38	350	524-850	230	d.c.	18" Blading Mill	Geared	1924	W. E. & M. Co.	South Phila. Works	W
39	360	300-600	230	d.c.	Rod Mill	Direct	1922	United Alloy Steel Corporation	Canton, Ohio	W
40	360	350-500	230	d.c.	7" Rod Mill	Direct	1915	United Alloy Steel Corporation	Canton, Ohio	W
41	375	430-860	230	d.c.	20" Cold Rolling Mill	Geared	1922	Otis Steel Company	Cleveland, Ohio	W
42	375	430-860	230	d.c.	20" Cold Rolling Mill	Geared	1922	Otis Steel Company	Cleveland, Ohio	W
43	375	430-860	230	d.c.	20" Cold Rolling Mill	Geared	1922	Otis Steel Company	Cleveland, Ohio	W
44	375	430-860	230	d.c.	20" Cold Rolling Mill	Geared	1922	Otis Steel Company	Cleveland, Ohio	W
45	375	430-860	230	d.c.	20" Cold Rolling Mill	Geared	1922	Otis Steel Company	Cleveland, Ohio	W
46	375	430-860	230		Cold Roll Mill	Geared	1925	Otis Steel Co.	Cleveland, Ohio	GE
47	375	430-860	230		Cold Roll Mill	Geared	1925	Otis Steel Co.	Cleveland, Ohio	GE
48	400	200-300	230	d.c.	9" Merchant Mill	Direct	1914	United Alloy Steel Corporation	Canton, Ohio	W
49	400	240-721	600	d.c.	9" Merchant Mill	Geared	1926	Illinois Steel Co.	Gary, Ind.	GE
50	400	240-721	600	d.c.	9" Merchant Mill	Geared	1926	Illinois Steel Co.	Gary, Ind.	GE
51	400	240-721	600	d.c.	9" Merchant Mill	Geared	1926	Illinois Steel Co.	Gary, Ind.	GE
52	400	240-721	600	d.c.	9" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
53	400	250-500	230		10" Merchant Mill	Direct	1920	Timken Roller Bearing Co.	Canton, Ohio	GE
54	400	275-500	550		12" Hot Strip Mill	Direct	1916	American Steel & Wire Co.	Cleveland, Ohio	GE
55	400	400-450	220	d.c.	8" Merchant Mill	Direct	1911	Illinois Steel Co.	Milwaukee, Wis.	W
56	400	400-800	230	d.c.	Cold Strip Mill	Geared	1926	Trumbull Steel Co.	Warren, Ohio	GE
57	400	500-1000	600	d.c.	Strip Mill	Geared	1926	Forged Steel Wheel Co.	Butler, Pa.	AC
58	400	500-1000	600	d.c.	Strip Mill	Geared	1926	Forged Steel Wheel Co.	Butler, Pa.	AC
59	400	500-1000	600	d.c.	Strip Mill	Geared	1926	Forged Steel Wheel Co.	Butler, Pa.	AC
60	400	500-1000	600	d.c.	Strip Mil,	Geared	1926	Forged Steel Wheel Co.	Butler, Pa.	AC
61	400-200	800-400	230		Copper Sheet Mill	Geared	1925	Rome Brass & Copper Co.	Rome, N. Y.	GE
62	450	200-400	230	d.c.	26" x 72" Sheet Zinc Mill	Geared	1924	Illinois Zinc Co.	Peru, Illinois	W
63	450	211-422	600	d.c.	9" Merchant Mill	Geared	1926	Illinois Steel Co.	Gary, Ind.	GE
64	450	211-422	600	d.c.	9" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
65	450	400-650	230	d.c.	Rod (1 Stand) No. 2	Direct	1913	American Steel & Wire Co.	Worcester, Mass.	W
66	450	450-600	230	d.c.	12" Cold Rolls (2 Tandem Stands Roughing)	Geared	1915	Superior Steel Co.	Carnegie, Pa.	W
67	450	450-600	230	d.c.	12" Cold Rolls (2 Tandem Stands Roughing)	Geared	1915	Superior Steel Co.	Carnegie, Pa.	W
68	450	550-750	230	d.c.	Zinc Strip Mills	Geared	1925	Matthiessen & Hegeler Zinc Co.	LaSalle, Ill.	CW
69	500	130-310	600	d.c.	10" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
70	500	150-225	250	d.c.	12" Merchant Mill	Direct	1919	Natl. Farming Machinery, Ltd.	Montmagny, P. Q.	W
71	500	150-550	600	d.c.	10" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
72	500	155-500	250	d.c.	Tyre Mill	Direct	1923	McConway Torley Co.	Pittsburgh, Pa.	W
73	500	175-350	250	d.c.	12" Merchant Mill	Direct	1926	Pittsburgh Crucible Steel Co.	Midland, Pa.	GE
74	500	175-350	600	d.c.	12" Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
75	500	175-350	600	d.c.	12" Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
76	500	175-350	600	d.c.	12" Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
77	500	180-360	600	d.c.	14"-12" Skelp Mill	Geared	1926	Wheeling Steel Corp.	Benwood, W. Va.	GE
78	500	200-400	250	d.c.	10" Cont. Rolling Mill	Coupled	1925	Republic Iron & Steel Co.	Youngstown, Ohio	AC
79	500	220-400	550	d.c.	Brass Mill	Geared	1913	Scoville Mfg. Co.	Waterbury, Conn.	W
80	500	220-400	550	d.c.	Brass Mill	Geared	1913	Scoville Mfg. Co.	Waterbury, Conn.	W
81	500	220-400	550	d.c.	Brass Mill	Geared	1913	Scoville Mfg. Co.	Waterbury, Conn.	W
82	500	220-400	550	d.c.	Brass Mill	Geared	1913	Scoville Mfg. Co.	Waterbury, Conn.	W
83	500	220-400	550	d.c.	Brass Mill	Geared	1913	Scoville Mfg. Co.	Waterbury, Conn.	W
84	500	250-325	230		8" Hoop Mill	Direct	1909	Atlantic Steel Co.	Atlanta, Ga.	GE
85	500	250-500	230	d.c.	9" Hoop Mill (Finishing)	Direct	1914	Sharon Steel Hoop Co.	Sharon, Pa.	W
86	500	250-350	600	d.c.	9" Merchant Mill	Direct	1921	Missouri Rolling Mill Co.	St. Louis, Mo.	W
87	500	250-600	250	d.c.	12"-9" Mill	Coupled	1925	Bethlehem Steel Co.	Johnstown, Pa.	AC
88	500	267-800	230	d.c.	Hot Merchant Mill	Geared	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
89	500	267-800	230	d.c.	Hot Merchant Mill	Direct	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
90	500	267-800	230	d.c.	Hot Merchant Mill	Direct	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
91	500	267-800	230	d.c.	Hot Merchant Mill	Direct	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
92	500	267-800	230	d.c.	Hot Merchant Mill	Geared	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
93	500	300-450	230	d.c.	Lap Welding Mill	Coupled		Gary Tube Co.	Gary, Ind.	AC
94	500	400-600	230		Hoop Mill	Geared	1920	Atlantic Steel Co.	Atlanta, Ga.	GE
95	550	120-300	250	d.c.	10" Merchant Mill	Direct	1923	Firth Sterling Steel Co.	McKeesport, Pa.	W
96	550	336-588	600	d.c.	9" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
97	550	420-714	600	d.c.	9" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
98	550	420-714	600	d.c.	9" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
99	600	150-250	575		6" Hot Strip Mill	Direct	1913	American Steel & Wire Co.	Cleveland, Ohio	GE
100	600	185-470	600	d.c.	10" Strip Mill	Direct	1926	LacLede Steel Co.	Alton, Ill.	W
101	600	200-300	230	d.c.	9" Merchant Mill	Direct	1914	United Alloy Steel Corporation	Canton, Ohio	W
102	600	200-300	230	d.c.	9" (Finishing Train) Mill	Direct	1915	United Alloy Steel Corporation	Canton, Ohio	W
103	600	225-425	550		12" Hot Strip Mill	Direct	1916	American Steel & Wire Co.	Cleveland, Ohio	GE
104	600	270-635	600	d.c.	10" Strip Mill	Direct	1926	LacLede Steel Co.	Alton, Ill.	W

DIRECT CURRENT ADJUSTABLE SPEED DRIVES—Continued

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
105	600	360–440	500	d.c.	Aluminum Mill	Geared	1919	U. S. Aluminum Co.	Marysville, Tenn.	W
106	600	360–440	500	d.c.	Aluminum Mill	Geared	1919	U. S. Aluminum Co.	Marysville, Tenn.	W
107	600	360–440	500	d.c.	Aluminum Mill	Geared	1919	U. S. Aluminum Co.	Marysville, Tenn.	W
108	600	400–800	250	d.c.	18" Merchant Mill	Geared	1926	Pittsburgh Crucible Steel Co.	Midland, Pa.	GE
109	650	225–400	600	d.c.	Piercing Mill	Geared	1925	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
110	650	225–400	600	d.c.	Piercing Mill	Geared	1925	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
111	650	225–400	600	d.c.	Piercing Mill	Geared	1925	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
112	700	130–310	600	d.c.	10" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
113	700	130–310	600	d.c.	10" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
114	700	210–660	600	d.c.	10" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
115	700	210–660	600	d.c.	10" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
116	700	240–450	250	d.c.	9" Merchant Mill	Direct	1925	Crucible Steel Co.	Pittsburgh, Pa.	GE
117	700	300–400	230	d.c.	Lap Welding Mill	Coupled	1923	Gary Tube Co.	Gary, Ind.	AC
118	720–900	160–200	220	d.c.	Wheel Mill	Geared	1906	Bethlehem Steel Co.	Johnstown, Pa.	GE
119	720	395–825	600	d.c.	10" Strip Mill	Direct	1926	LacLede Steel Co.	Alton, Ill.	W
120	720	480–1000	600	d.c.	10" Strip Mill	Direct	1926	LacLede Steel Co.	Alton, Ill.	W
121	750	120–210	250	d.c.	14" Finishing Mill	Coupled	1923	Pittsburgh Crucible Steel Co.	Midland, Pa.	AC
122	750	120–210	250	d.c.	14" Finishing Mill	Coupled	1923	Pittsburgh Crucible Steel Co.	Midland, Pa.	AC
123	750	150–250	600		14" Merchant Mill	Direct	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
124	750	235–325	230		Piercing Mill	Geared	1914	Pittsburgh Seamless Tube Co.	Beaver Falls, Pa.	GE
125	750	300–600	230	d.c.	Cold Rolling Mill	Geared	1924	International Nickel Co.	Huntington, W. Va.	AC
126	750	300–600	230	d.c.	Bliss Cold Roll Drive	Geared	1926	International Nickle Co.	Huntington, W. Va.	AC
127	750–750	360–860	600	d.c.	14" Continuous Mill	Geared	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
128	800	175–350	600	d.c.	12" Alloy Bar Mill	Direct	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
129	800	175–350	600	d.c.	12" Alloy Bar Mill	Direct	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
130	800	250–300	500	d.c.	Piercing Mill	Direct	1912	Pittsburgh Steel Products Co.	Monessen, Pa.	W
131	800	200–300	500	d.c.	Piercing Mill	Rope	1912	Pittsburgh Steel Products Co.	Monessen, Pa.	W
132	800	200–400	600		14" Hot Strip Mill	Direct	1920	Trumbull Steel Co.	Warren, Ohio	GE
133	800	200–400	250	d.c.	9" 7 Stand Mill	Coupled	1926	Crucible Steel Co. of America	Harrison, N. J.	AC
134	800	200–415	600	d.c.	12" Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	GE
135	800	200–415	600	d.c.	12" Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	GE
136	800	200–415	600	d.c.	12" Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	GE
137	800	210–315	575		6" Hot Strip Mill	Direct	1907	American Steel & Wire Co.	Cleveland, Ohio	GE
138	800	220–440	600	d.c.	12" Alloy Bar Mill	Direct	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
139	800	220–440	600	d.c.	12" Alloy Bar Mill	Direct	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
140	800	220–440	600	d.c.	12" Alloy Bar Mill	Direct	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
141	800	231–462	600		14" Hot Strip Mill	Direct	1920	Trumbull Steel Co.	Warren, Ohio	GE
142	800	240–480	600	d.c.	12" Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	GE
143	800	250–500	230	d.c.	14" and 9" Hoop Mill	Direct	1914	Sharon Steel Hoop Co.	Sharon, Pa.	W
144	800	256–512	600		14" Hot Strip Mill	Direct	1920	Trumbull Steel Co.	Warren, Ohio	GE
145	800	260–390	575		6" Hot Strip Mill	Direct	1907	American Steel & Wire Co.	Cleveland, Ohio	GE
146	800	275–550	600		14" Hot Strip Mill	Direct	1920	Trumbull Steel Co.	Warren, Ohio	GE
147	800	275–550	700		12" Merchant Mill	Geared	1925	Penn Seaboard Steel Co.	New Castle, Del.	GE
148	800	275–550	700		12" Merchant Mill	Geared	1925	Penn Seaboard Steel Co.	New Castle, Del.	GE
149	800	275–550	700		9" Merchant Mill	Direct	1925	Penn Seaboard Steel Co.	New Castle, Del.	GE
150	800	350–600	230	d.c.	Band Mill	Direct	1926	Sharon Steel Hoop Co.	Sharon, Pa.	CW
151	800	350–600	230	d.c.	Band Mill	Direct	1926	Sharon Steel Hoop Co.	Sharon, Pa.	CW
152	800	350–750	600		Cont. Merchant Mill	Direct	1925	Inland Steel Co.	Indiana Harbor, Ind.	GE
153	800	350–700	600	d.c.	20" Merchant Mill (Breakdown)	Geared	1921	Driver Harris Co.	Harrison, N. J.	W
154	800	360–440	500	d.c.	Aluminum Mill	Geared	1919	U. S. Aluminum Co.	Marysville, Tenn.	W
155	800	360–440	500	d.c.	Aluminum Mill	Geared	1919	U. S. Aluminum Co.	Marysville, Tenn.	W
156	800	370–400	650	d.c.	Aluminum Mill	Direct	1917	U. S. Aluminum Co.	Niagara Falls, N. Y.	W
157	800	370–400	650	d.c.	Aluminum Mill	Direct	1919	U. S. Aluminum Co.	Niagara Falls, N. Y.	W
158	800	400–600	600	d.c.	16" Merchant Mill	Geared	1921	Missouri Rolling Mill Co.	St. Louis, Mo.	W
159	800	410–720	230	d.c.	16" Merchant Mill (Rougher)	Geared	1923	Timken Roller Bearing Co.	Canton, Ohio	W
160	800–363	320–706	600		10" Rod Mill	Geared	1922	Wheeling Steel Corp.	Portsmouth, Ohio	GE
161	800–363	320–706	600		10" Rod Mill	Geared	1922	Wheeling Steel Corp.	Portsmouth, Ohio	GE
162	300–363	320–706	600		10" Rod Mill	Geared	1922	Wheeling Steel Corp.	Portsmouth, Ohio	GE
163	800	535–750	600	d.c.	10" Wire Rod Mill	Geared	1926	American Steel & Wire Co.	Worcester, Mass.	W
164	800	535–750	600	d.c.	10" Wire Rod Mill	Geared	1926	American Steel & Wire Co.	Worcester, Mass.	W
165	900	425–640	250	d.c.	12"–10" Mill	Coupled	1925	Bethlehem Steel Co.	Johnstown, Pa.	AC
166	975–375	650–250	600	d.c.	Rod (Roughing) Mill	Geared	1922	Atlantic Steel Co.	Atlanta, Ga.	W
167	975–510	865–450	600	d.c.	Rod (Finishing) Mill	Direct & Belted	1922	Atlantic Steel Co.	Atlanta, Ga.	W
168	1000	200–480	250	d.c.	12"–9" Mill	Geared	1925	Bethlehem Steel Co.	Johnstown, Pa.	AC
169	1000	200–480	250	d.c.	12"–9" Mill	Geared	1925	Bethlehem Steel Co.	Johnstown, Pa.	AC
170	1000–2000	200–400–600	250	d.c.	12"–10" Gautier Mill	Geared	1925	Bethlehem Steel Co.	Johnstown, Pa.	AC
171	1000	210–510	230	d.c.	Bar Mill	Geared	1925	Donner Steel Co.	Buffalo, N. Y.	W
172	1000	200–600	600	d.c.	10" Merchant Mill	Geared	1925	McKinney Steel Co.	Cleveland, Ohio	W
173	1000	290–500	600	d.c.	9" Merchant Mill	Geared	1926	Illinois Steel Co.	Gary, Indiana	GE
174	1000	300–400	230	d.c.	Lap Welding Mill			Gary Tube Co.	Gary, Ind.	AC
175	1000	350–700	600	d.c.	12" Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
176	1000	350–700	600	d.c.	12" Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
177	1000	350–700	600	d.c.	12" Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
178	1000	350–700	600	d.c.	12" Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
179	1000	350–700	600	d.c.	12" Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
180	1000	518–800	250	d.c.	20" Merchant Mill	Geared	1919	Natl. Farming Machinery Ltd.	Montmagny, P. Q.	W
181	1100	214–320	600	d.c.	12" Skelp Mill	Direct	1926	Bethlehem Steel Co.	Sparrows Point, Md.	W
182	1100	240–382	600	d.c.	12" Skelp Mill	Direct	1926	Bethlehem Steel Co.	Sparrows Point, Md.	W
183	1200	150–250	230		12" Merchant Mill	Direct	1920	Timken Roller Bearing Co.	Canton, Ohio	GE
184	1200	160–320	250	d.c.	12" Merchant Mill	Direct	1926	Pittsburgh Crucible Steel Co.	Midland, Pa.	GE
185	1200	200–400	230	d.c.	14" Band Mill	Direct	1926	Sharon Steel Hoop Co.	Sharon, Pa.	W
186	1200	200–400	230	d.c.	14" Band Mill	Direct	1926	Sharon Steel Hoop Co.	Sharon, Pa.	W
197	1200	300–500	600	d.c.	10" Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	W
188	1250	175–400	230	d.c.	Rod Mill	Direct	1915	United Alloy Steel Corp.	Canton, Ohio	W
189	1250	175–350	600		14" Hot Strip Mill	Geared	1920	Trumbull Steel Co.	Warren, Ohio	GE
190	1250	175–350	600		14" Hot Strip Mill	Geared	1920	Trumbull Steel Co.	Warren, Ohio	GE
191	1400	450–550	500	d.c.	12" Spring Mill	Coupled	1926	Ford Motor Co., Fordson Plant	Detroit, Mich.	AC
192	1500	50–80	600		Cont. Merchant Mill	Direct	1925	Inland Steel Co.	Indiana Harbor, Ind.	GE
193	1500	100–125	220	d.c.	Light Rail Mill	Direct	1905	Carnegie Steel Co.	Bessemer, Pa.	W
194	1500	100–125	220	d.c.	Light Rail Mill	Direct	1905	Carnegie Steel Co.	Bessemer, Pa.	W
195	1500	100–150	600		14" Merchant Mill	Direct	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
196	1500	125–250	230	d.c.	14" Band Mill	Direct	1914	Sharon Steel Hoop Co.	Sharon, Pa.	W
197	1500	125–250	240	d.c.	Strip Mill	Geared	1922	West Leechburg Steel Co.	Leechburg, Pa.	W
198	1500	125–250	240	d.c.	Strip Mill	Geared	1922	West Leechburg Steel Co.	Leechburg, Pa.	W
199	1500	150–300	250	d.c.	18-14" Structural Mill	Direct	1924	Bethlehem Steel Corp.	Johnstown, Pa.	AC
200	1500	150–300	250	d.c.	18-14" Structural Mill	Direct	1924	Bethlehem Steel Corp.	Johnstown, Pa.	AC
200	1500	198–100	600	d.c.	10" Strip Mill	Rope & Direct	1926	LacLede Steel Co.	Alton, Ill.	W
201	1500	200–400	600	d.c.	20"–16" Hot Strip Mill	Geared	1925	Acme Steel Goods Co.	Riverdale, Ill.	W
202	1500	200–300	600		10" Merchant Mill	Direct	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
203	1500	280–420	600		20" Hot Strip Mill	Geared	1922	Otis Steel Co.	Cleveland, Ohio	GE
204	1500	280–420	600		20" Hot Strip Mill	Geared	1922	Otis Steel Co.	Cleveland, Ohio	GE
205	1500	280–420	600		20" Hot Strip Mill	Geared	1922	Otis Steel Co.	Cleveland, Ohio	GE

DIRECT CURRENT ADJUSTABLE SPEED DRIVES—Continued

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd By
206	1500	450–550	600		Rod Mills Nos. 16 to 18	Direct	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
207	1500	470–510	230	d.c.	Rod Mill	Direct	1923	John A. Roebling Sons	New York, N. Y.	W
208	1600	210–420	525	d.c.	Rod Mill	Geared	1913	Steel Co. of Canada	Hamilton, Ont.	W
209	1600	210–420	525	d.c.	Rod Mill	Geared	1913	Steel Co. of Canada	Hamilton, Ont.	W
210	1700	90–140	600		14″ Mill	Direct	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
211	1700	90–205	600		14″ Mill	Direct	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
212	1700	250–500	250	d.c.	12″–10″ Mill	Geared	1925	Bethlehem Steel Co.	Johnstown, Pa.	AC
213	1750	100–200	500	d.c.	12″ Spring Mill	Coupled	1926	Ford Motor Co., Fordson Plant	Detroit, Mich.	AC
214	1750	150–300	230	d.c.	18-14″ Structural Mill	Direct	1924	Bethlehem Steel Corp.	Lackawanna, N. Y.	AC
215	1800	115–230	600		20″ Hot Strip Mill	Direct	1922	Otis Steel Co.	Cleveland, Ohio	GE
216	1800	115–230	600		20″ Hot Strip Mill	Direct	1922	Otis Steel Co.	Cleveland, Ohio	GE
217	1800	115–230	600		20″ Hot Strip Mill	Direct	1922	Otis Steel Co.	Cleveland, Ohio	GE
218	1800	125–250	600	d.c.	20″–16″ Hot Strip Mill	Direct	1925	Acme Steel Goods Co.	Riverdale, Ill.	W
219	1800	125–250	600	d.c.	20″–16″ Hot Strip Mill	Direct	1925	Acme Steel Goods Co.	Riverdale, Ill.	W
220	1800	150–300	250	d.c.	18-14″ Structural Mill	Direct	1924	Bethlehem Steel Co.	Lackawanna, N. Y.	AC
221	1800	165–350	240	d.c.	Strip Mill	Direct	1922	West Leechburg Steel Co.	Leechburg, Pa.	W
222	1800	165–350	240	d.c.	Strip Mill	Direct	1922	West Leechburg Steel Co.	Leechburg, Pa.	W
223	1800	185–370	600	d.c.	20″–16″ Hot Strip Mill	Geared	1925	Acme Steel Goods Co.	Riverdale, Ill.	W
224	1800	185–370	600	d.c.	20″–16″ Hot Strip Mill	Direct	1925	Acme Steel Goods Co.	Riverdale, Ill.	W
225	1800	185–370	600	d.c.	20″–16″ Hot Strip Mill	Direct	1925	Acme Steel Goods Co.	Riverdale, Ill.	W
226	1800	200–400	600		Cont. Merchant Mill	Geared	1925	Inland Steel Co.	Indiana Harbor, Ind.	GE
227	1800	275–550	600	d.c.	12″ Skelp Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	W
228	1800	275–550	600	d.c.	12″ Skelp Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	W
229	1800	350–640	500	d.c.	18″ Rougher Mill	Geared	1926	Pittsburgh Crucible Steel Co.	Midland ,Pa.	AC
230	1800	550–650	250	d.c.	22″ Merchant Mill	Geared	1925	Crucible Steel Co.	Pittsburgh, Pa.	GE
231	1850	575–221	600	d.c.	Rod Mill	Direct & Belted	1922	Atlantic Steel Co.	Atlanta, Ga.	W
232	2000	85–165	600		21″ Cont. Sheet Bar and Skelp Mill	Geared	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE
233	2000	85–165	600		21″ Cont. Sheet Bar and Skelp Mill	Geared	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE
234	2000	85–165	600		21″ Cont. Sheet Bar and Skelp Mill	Geared	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE
235	2000	134–275	600	d.c.	10″ Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	W
236	2000	200–400	600	d.c.	Hot Strip Mill	Geared	1926	Columbia Steel Co.	Butler, Pa.	GE
237	2000	200–400	600	d.c.	Hot Strip Mill	Geared	1926	Columbia Steel Co.	Butler, Pa.	GE
238	2000	200–400	600	d.c.	Hot Strip Mill	Geared	1926	Columbia Steel Co.	Butler, Pa.	GE
239	2000	200–400	600	d.c.	Hot Strip Mill	Geared	1926	Columbia Steel Co.	Butler, Pa.	GE
240	2000	200–400	600	d.c.	14″-12″ Skelp Mill	Geared	1926	Wheeling Steel Co.	Benwood, W. Va.	GE
241	2000	200–400	600	d.c.	14″-12″ Skelp Mill	Geared	1926	Wheeling Steel Co.	Benwood, W. Va.	GE
242	2000	200–400	600	d.c.	14″-12″ Skelp Mill	Geared	1926	Wheeling Steel Co.	Benwood, W. Va.	GE
243	2000	200–400	600	d.c.	Strip Sheet Mill	Direct	1926	Weirton Steel Co.	Weirton, W. Va.	GE
244	2000	200–400	600	d.c.	Strip Sheet Mill	Direct	1926	Weirton Steel Co.	Weirton, W. Va.	GE
245	2000	230–460	600	d.c.	Merchant Mill	Direct	1925	International Harvester Co.	Chicago, Ill.	W
246	2000	230–460	600	d.c.	Merchant Mill	Direct	1925	International Harvester Co.	Chicago, Ill.	W
247	2000	230–460	600	d.c.	Merchant Mill	Direct	1925	International Harvester Co.	Chicago, Ill.	W
248	2000	230–460	600	d.c.	Sheet Mill	Geared	1926	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
249	2000–1700	210–680	600		14″ Mill	Direct	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
250	2000	260–800	600		14″ Mill	Direct	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
251	2000	315–500	600	d.c.	10″ Merchant Mill	Geared	1926	Illinois Steel Co.	Gary, Ind.	GE
252	2100	150–310	600		14″ Mill	Direct	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
253	2100–1600	150–460	600		14″ Mill	Direct	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
254	2500	160–320	600	d.c.	Continuous Sheet Mill	Geared	1926	American Sheet & Tinplate Co.	Gary, Ind.	W
255	2500	160–320	600	d.c.	Continuous Sheet Mill	Geared	1926	American Sheet & Tinplate Co.	Gary Ind.	W
256	2500	160–320	600	d.c.	Continuous Sheet Mill	Geared	1926	American Sheet & Tinplate Co.	Gary, Ind.	W
257	2500	160–320	600	d.c.	Continuous Sheet Mill	Geared	1926	American Sheet & Tinplate Co.	Gary, Ind.	W
258	2500	160–320	600	d.c.	Continuous Sheet Mill	Geared	1926	American Sheet & Tinplate Co.	Gary, Ind.	W
259	2500	160–320	600	d.c.	Continuous Sheet Mill	Geared	1926	American Sheet & Tinplate Co.	Gary, Ind.	W
260	2500	200–400	600	d.c.	Strip Sheet Mill	Direct	1926	Weirton Steel Co.	Weirton, W. Va.	GE
261	2500	200–400	600	d.c.	Strip Sheet Mill	Direct	1926	Weirton Steel Co.	Weirton, W. Va.	GE
262	2500	200–400	600	d.c.	Strip Sheet Mill	Direct	1926	Weirton Steel Co.	Weirton, W. Va.	GE
263	2600	320–275	600	d.c.	26″ & 21″ Cont. Mill	Direct	1926	Bethlehem Steel Co.	Sparrows Point, Md.	GE
264	2870–1435	200–400	600		10″ Rod Mill	Geared	1922	Wheeling Steel Corp.	Portsmouth, Ohio	GE
265	3000	40–100	600	d.c.	Piercing Mill	Direct	1925	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
266	3000	125–200	600	d.c.	Piercing Mill	Direct	1925	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
267	3000	150–300	250	d.c.	18-14″ Structural Mill	Direct	1924	Bethlehem Steel Corp.	Johnstown, Pa.	AC
268	3000	150–300	250	d.c.	18-14″ Structural Mill	Direct	1924	Bethlehem Steel Corp.	Johnstown, Pa.	AC
269	3000	180–370	600	d.c.	10″ Wire Rod Mill	Geared	1926	American Steel & Wire Co.	Worcester, Mass.	W
270	3000	200–360	600		14″ Mill	Direct	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
271	3000	325–485	600	d.c.	24″ Structural Mill	Geared	1923	Phoenix Iron Co.	Phoenixville, Pa.	W
272	3200	50–120	700	d.c.	28″ Structural Mill	Direct	1915	Inland Steel Co.	Indiana Harbor, Ind.	W
273	3500	150–300	230	d.c.	18-14″ Structural Mill	Direct	1924	Bethlehem Steel Corp.	Lackawanna, N. Y.	AC
274	3600	150–300	250	d.c.	18-14″ Structural Mill	Direct	1924	Bethlehem Steel Co.	Lackawanna, N. Y.	AC
275	4500	67.5–110	500		14″ Merchant Mill	Direct	1923	Ford Motor Co.	Detroit, Mich	GE
276	4500	120–255	750	d.c.	Universal Skelp Mill	Coupled	1925	Gary Tube Co.	Gary, Ind.	AC

BAR AND BILLET MILL DRIVES

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	300	250	440	25 cy.	Cogging Mill	Geared	1910	Simonds Mfg. Co.	Lockport, N. Y.	GE
2	300	375	2200	25 cy.	Bar Mill	Coupled		Bethlehem Steel Co.	Johnstown, Pa.	AC
3	300	375	2200	25 cy.	10" Bar Mill	Geared	1919	Hammond Steel Co.	Solvay, N. Y.	GE
4	300	400	550	60 cy.	14" Bar Mill	Geared	1926	Ludlum Steel Co.	Watervliet, N. Y.	GE
5	300	450	230	d.c.	Bar Mill	Geared	1916	Carbon Steel Co.	Pittsburgh, Pa.	W
6	300	450	550	60 cy.	Bar Mill	Coupled	1921	Nat'l Conduit & Cable Co.	Hast. on Hudson, N.Y	AC
7	300	514	2200	60 cy.	Bar Mill	Geared	1915	C. G. Hussey	Pittsburgh, Pa.	AC
8	300-300-150	600-400-300	440	60 cy.	Bar Mill	Chain	1916	Vulcan Crucible Steel Co.	Aliquippa, Pa.	GE
9	300	600	2300	60 cy.	12" Billet Mill	Geared	1916	Tenn. Coal, Iron & R. R. Co.	Bessemer, Ala.	GE
10	300	720	440	60 cy.	Bar Mill	Geared	1920	Hoskins Mfg. Co.,	Detroit, Mich.	AC
11	300	750	2200	25 cy.	10" Bar Mill	Geared	1923	Bethlehem Steel Co.	Lebanon, Pa.	GE
12	335	360	2200	60 cy.	Bar Mill	Geared	1915	Heppenstall Forge & Knife Co.	Pittsburgh, Pa.	GE
13	350	125	6600	25 cy.	12" Bar Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
14	350-350	360-240	440	60 cy.	Bar Mill	Coupled	1921	Simmons Mfg. Co.	Kenosha, Wis.	AC
15	350	600	2200	60 cy.	Bar Mill	Belted	1920	Joslyn Mfg. Co.	Chicago, Ill.	AC
16	400-400	107-64	2200	25 cy.	16" Bar Mill	Direct	1914	Bethlehem Steel Co.	Lebanon, Pa.	GE
17	400	400	400	60 cy.	Bar Mill	Chain	1918	Latrobe Steel Co.	Latrobe, Pa.	AC
18	400	440	4000	60	Billet Mill	Coupled	1923	Bryden Neverslip Co.	Catasauqua, Pa.	AC
19	400	450	2200	60 cy.	12" Bar Mill	Geared	1924	Atchison, Topeka & Santa Fe Ry.	Chicago, Ill.	AC
20	400	450	2200	60 cy.	9" Bar Mill	Geared	1924	Atchison, Topeka & Santa Fe Ry.	Chicago, Ill.	AC
21	400	514	2200	60 cy.	Bar Mill	Geared	1919	Judson Mfg. Co.	Oakland, Calif.	AC
22	400-225	600-300	550	40 cy.	Bar Mill	Geared	1909	Ludlum Steel Co.	Watervliet, N. Y.	GE
23	400	705	2200	60 cy.	16" Cogging Mill	Geared	1923	Crucible Steel Co. of America	Park Works, Pgh., Pa.	W
24	400	720-450	2200	60 cy.	Bar Mill	Geared	1917	Cyclops Steel Co.	Titusville, Pa.	AC
25	400-265	875-585	2200	60 cy.	Bar Mill	Geared	1913	Old Dominion Iron & Nail Co.	Richmond, Va.	W
26	400	900	2200	50	Bar and Billet Mill	Geared	1925	Crucible Steel Co.	Pittsburgh, Pa.	W
27	450	125	6600	25 cy.	12" Bar Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
28	500	175-350	600	d.c.	12" Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
29	500	175-350	600	d.c.	12" Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
30	500	175-350	600	d.c.	12" Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
31	500	250	440	25 cy.	10" Bar Mill	Geared	1917	Simonds Mfg. Co.	Lockport, N. Y.	GE
32	500	300	2200	60 cy.	Bar Mill	Coupled	1920	Ft. Wayne Rolling Mill Co.	Ft. Wayne, Ind.	AC
33	500	360	2200	60 cy.	16" Bar Mill	Geared	1915	Tenn. Coal, Iron & R. R. Co.	Bessemer, Ala.	GE
34	500	440	2200	60	Bar Mill	Geared	1924	Universal Steel Co.	Bridgeville, Pa.	AC
35	500	440	4000	60	Bar Mill	Coupled	1923	Bryden Neverslip Co.	Catasauqua, Pa.	AC
36	500	450	440	60 cy.	Bar Mill	Geared	1910	Chase Rolling Mills Co.	Waterbury, Conn.	GE
37	500	450	440	50 cy.	Bar Mill	Geared	1910	Chase Rolling Mills Co.	Waterbury, Conn.	GE
38	500	450	440	50 cy.	16" Bar Mill	Geared	1914	Carbon Steel Co.	Pittsburgh, Pa.	GE
39	500	450	2200	60 cy.	Billet Mill	Geared	1915	International High Speed Steel Co	Rockaway, N. J.	GE
40	500	450	2200	50	Bar Mill	Geared	1925	Indianapolis Steel Products Co.	Indianapolis, Ind.	AC
41	500	500	2200	25 cy.	16" Bar Mill	Geared	1919	Hammond Steel Co.	Solvay, N. Y.	GE
42	500	514	2200	60 cy.	Bar Mill	Rope	1917	Henry Disston & Son	Philadelphia, Pa.	AC
43	500	514	2200	60 cy.	Bar Mill	Geared	1920	Metals Production Equip. Co.	Springfield, Mass.	AC
44	500	514	2200	60 cy.	Bar Mill	Geared	1920	Metals Production Equip. Co.	Springfield, Mass.	AC
45	500	514	2200	60 cy.	Bar Mill	Geared	1920	Metals Production Equip. Co.	Springfield, Mass.	AC
46	500	514	440	60 cy.	Bar Mill	Chain	1915	Simmons Mfg. Co.	Kenosha, Wis.	AC
47	500	514	2200	60 cy.	Bar Mill	Geared	1919	Judson Mfg. Co.	Oakland, Calif.	AC
48	500	600	2200	60 cy.	Bar Mill	Belted	1919	Joslyn Mfg. Co.	Chicago, Ill.	AC
49	600	171	440	40 cy.	Bar Mill	Geared	1910	Ludlum Steel Co.	Watervliet, N. Y.	GE
50	600	300	2200	25 cy.	Muck Mill	Chain	1914	St. Louis Screw Co.	St. Louis, Mo.	AC
						Coupled	1914			
51	600-600	300-214	2200	25 cy.	Bar Mill	& Rope	1914	St. Louis Screw Co.	St. Louis, Mo.	AC
52	600	300-214	2200	25 cy.	Bar Mill	Chain		St. Louis Screw Co.	St. Louis, Mo.	AC
53	600	300-330		d.c.	10" Bar Mill	Coupled	1921	Universal Steel Company	Bridgeville, Pa.	CW
54	600	368	6600	25 cy.	18-21" Bar (Rough.) Mill	Geared	1924	Pittsburgh Crucible Steel Co.	Midland, Pa.	GE
55	600	490	2200	25 cy.	16" Bar (Roughing) Mill	Geared	1919	Scullin Steel Co.	St. Louis, Mo.	W
56	600	514	2200	60	18" Bar Mill	Geared	1926	American Nickel Corp.	Hyde, Pa.	GE
57	600-300	600-300	550	60	9" Bar Mill No. 2	Geared	1926	Ludlum Steel Co.	Watervliet, N. Y.	GE
58	700	250	2200	25 cy.	18" Bar Mill	Rope	1911	Dilworth Porter Co.	Pittsburgh, Pa.	GE
59	700	390	2200	60 cy.	18" Bar Mill	Geared	1922	Dilworth Porter Co.	Pittsburgh, Pa.	W
60	700	600		60	14" Bar Mill	Coupled	1921	Universal Steel Company	Bridgeville, Pa.	CW
61	750	120-210	250	d.c.	14" Bar Mill	Coupled	1923	Pittsburgh Crucible Steel Co.	Midland, Pa.	AC
62	750	120-210	250	d.c.	14" Bar Mill	Coupled	1923	Pittsburgh Crucible Steel Co.	Midland, Pa.	AC
63	750-750	225-168	440	60 cy.	Bar Mill	Coupled	1921	Simmons Mfg. Co.	Kenosha, Wis.	AC
64	750	250	2200	25 cy.	Bar Mill	Geared	1914	Bethlehem Steel Co.	Johnstown, Pa.	AC
65	750	250	440	25 cy.	Bar Mill	Coupled	1920	Simonds Mfg. Co.	Lockport, N. Y.	AC
66	800	175-350	600	d.c.	12" Alloy Bar Mill	Direct	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
67	800	175-350	600	d.c.	12" Alloy Bar Mill	Direct	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
68	800	220-150	2200	25 cy.	12" Bar (Finishing) Mill	Direct	1919	Scullin Steel Co.	St. Louis, Mo.	W
69	800	220-440	600	d.c.	12" Alloy Bar Mill	Direct	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
70	800	220-440	600	d.c.	12" Alloy Bar Mill	Direct	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
71	800	220-440	600	d.c.	12" Alloy Bar Mill	Direct	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
72	800	250	2200	60 cy.	22" Bar Mill	Rope	1915	Timken Roller Bearing Co.	Canton, Ohio	W
73	800	257	2200	60 cy.	Bar Mill	Geared	1914	Standard Seamless Tube Co.	Economy, Pa.	GE
74	800	277	2200	60 cy.	Bar Mill	Geared	1918	Pacific Coast Steel Co.	San Francisco, Calif.	AC
75	800	292	2200	25 cy.	18" Tandem Billet Mill	Direct	1912	Laclede Steel Co.	Alton, Ill.	W
76	800	350	2200	60 cy.	Billet Mill	Geared	1915	Milton Manufacturing Co.	Milton, Pa.	W
77	800	514	2200	60 cy.	Bar Mill	Geared	1919	Judson Mfg. Co.	Oakland, Calif.	AC
78	800-400	360-180	550	40 cy.	Bar Mill	Geared	1926	Ludlum Steel Co.	Watervliet, N. Y.	GE
79	800-400	360-180	550	40 cy.	Bar Mill	Geared	1926	Ludlum Steel Co.	Watervliet, N. Y.	GE
80	800-400	360-180	550	60	Bar Mi	Geared	1926	Ludlum Steel Co.	Watervliet, N. Y.	GE
81	800-400	360-180	550	60	Bar Mill	Geared	1926	Ludlum Steel Co.	Watervliet, N. Y.	GE
82	800	730-365	2200	50 cy.	22" Bar Mill	Geared	1916	Columbia Steel Co.	Los Angeles, Cal.	W
83	800	880-490	2200	60 cy.	16" Bar Mill	Geared	1920	Knoxville Iron Co.	Knoxville, Tenn.	W
84	850	505	2200	60 cy.	24" Bar (Roughing) Mill	Geared	1919	Central Steel Co.	Massillon, Ohio	W
85	1000-400	257-128	550	60	9" Bar Mill No. 1	Geared	1926	Ludlum Steel Co.	Watervliet, N. Y.	GE
86	1000	277	2200	60 cy.	22" Bar Mill	Geared	1919	Pennsylvania Forge Co.	Philadelphia, Pa.	GE
87	1000	350-700	600	d.c.	12" Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
88	1000	350-700	600	d.c.	12" Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chidcago, Ill.	GE
89	1000	350-700	600	d.c.	12" Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
90	1000	350-700	600	d.c.	12" Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
91	1000	350-700	600	d.c.	12" Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
92	1000	375	2200	25 cy.	Bar Mill	Geared	1913	Bethlehem Steel Co.	Johnstown, Pa.	AC
93	1000	450	2200	60 cy.	Bar Mill	Rope	1919	Pacific Coast Steel Co.	Seattle, Wash.	AC
94	1000	710	2200	50	20" Special Bar	Geared	1925	Rail Joint Company	Troy, N. Y.	W
95	1000	710	2200	60	20" Special Bar	Geared	1925	Rail Joint Company	Troy, N. Y.	W
96	1200-1000-800	450-375-300	6600	25 cy.	18" Bar Mill, No. 16	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
97	1200	505	2200	60 cy.	Bar (Roughing) Mill	Geared	1922	Youngstown Steel Co.	Youngstown, Ohio	W
98	1200	514	2200	60 cy.	Bar Mill	Geared	1917	Elyria Iron & Steel Co.	Elyria, Ohio	AC
99	1250	375	2080	25 cy.	18" Billet Mill	Geared	1918	Wickwire Spencer Steel Co.	Buffalo, N. Y.	GE
100	1250	375	2080	25 cy.	18" Billet Mill	Geared	1918	Wickwire Spencer Steel Co.	Buffalo, N. Y.	GE
101	1400	505	2200	60 cy.	14" Billet Mill	Geared	1917	Wickwire Spencer Steel Corp.	Palmer, Mass.	W
102	1500	182-162	6600	25 cy.	10" Bar Mill	Direct	1913	Carnegie Steel Co.	Duquesne, Pa.	W
103	1500	266	6400	25 cy.	Billet Mill	Geared	1916	American Steel & Wire Co.	Cleveland, Ohio	W
104	1500	270	2200	60 cy.	22" Bar and Billet Mill	Geared	1918	Central Steel Co.	Massillon, Ohio	W
105	1500	440	2200	60 cy.	22" Bar Mill	Geared	1919	Kansas Bolt & Nut Co.	Kansas City, Mo.	W

BAR AND BILLET MILL DRIVES—Continued

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
106	1500	450	2200	60 cy.	Bar Mill	Rope	1919	Pacific Coast Steel Co.	Seattle, Wash.	AC
107	1500	450	2200	60 cy.	Roughing Mill	Geared	1919	Pacific Coast Steel Co.	San Francisco, Calif.	AC
108	1500	705	2200	60 cy.	24" Bar (Finishing) Mill	Geared	1922	Youngstown Steel Co.	Youngstown, Ohio	W
109	1500	705	2200	60 cy.	22" Bar Mill	Geared	1924	Atchison, Topeka & Santa Fe Ry.		AC
110	1500	735	2200	25 cy.	Bar Mill	Geared	1923	Scullin Steel Co.	St. Louis, Mo.	AC
111	1600	150	6600	25 cy.	Bar Mill	Direct	1912	Pittsburgh Crucible Steel Co.	Pittsburgh, Pa.	GE
112	1600	257	2200	60 cy.	14" Cont. Billet Mill	Geared	1912	Atlantic Steel Co.	Atlanta, Ga.	GE
113	1600	280	2200	60 cy.	Continuous Billet Mill	Geared	1913	Steel Company of Canada	Hamilton, Ont.	W
114	1650–1500–1350	413–375–337	6600	25 cy.	10" Bar Mill, No. 10	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
115	1750	70–120	600	d.c.	29" Reversing Billet Mill	Direct	1916	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
116	1800	75	6600	25 cy.	30" Billet Mill	Direct	1914	Bethlehem Steel Co.	Bethlehem, Pa.	GE
117	1800	366	2200	25 cy.	22" Billet and Struct. Mill	Geared	1919	Scullin Steel Co.	St. Louis, Mo.	W
118	1800–1800–1800	370–300–247	6600	60 cy.	Sheet Bar Mill	Geared	1920	American Rolling Mill Co.	Ashland, Ky.	GE
119	1850–1450– 925	120– 94– 60	6600	25 cy.	16" Hand Bar Mill	Direct	1921	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
120	2000	50–100	600	d.c.	30" Reversing Bar Mill	Direct	1919	Follansbee Brothers Co.	Toronto, Ohio	W
121	2000	214	6600	25 cy.	40" Billet Mill	Geared	1907	Illinois Steel Co.	Gary, Ind.	GE
122	2000	214	6600	25 cy.	40" Billet Mill	Geared	1907	Illinois Steel Co.	Gary, Ind.	GE
123	2000	240	2200	60 cy.	18" Sheet Bar Mill	Geared	1920	Nat. Enameling & Stamping Co.	Granite City, Ill.	GE
124	2150	50–100	535	d.c.	Reversing Bar Mill	Direct	1926	Standard Seamless Tube Co.	Economy, Pa.	GE
125	2200–2000–1800	275–250–225	6600	25 cy.	10" Bar Mill, No. 15	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
126	2200	505–303	2200	60 cy.	18" Bar (Finishing) Mill	Geared	1919	Central Steel Co.	Massillon, Ohio	W
127	2400	505	2200	60	22" Bar Mill	Geared	1926	Pacific Coast Steel Co.	Seattle, Wash.	W
128	2500	150	6600	25 cy.	28" Billet Mill	Geared	1923	Pittsburgh Crucible Steel Co.	Midland, Pa.	GE
129	2500	240	2200	60 cy.	24" Sheet Bar Mill	Geared	1920	Mansfield Sheet & Tin Plate Co.	Mansfield, Ohio	GE
130	2500	295	2200	60	18" Cont. Billett Mill	Geared	1926	American Steel & Wire Co.	Worcester, Mass.	AC
131	2500	500	2200	60 cy.	22" Bar Mill	Geared	1923	Phoenix Iron Co.	Phoenixville, Pa.	W
132	2750–2500–2250	275–250–225	6600	25 cy.	14" Bar Mill, No. 14	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
133	3000	70–150	750	d.c.	24" Bar Mill	Direct	1925	Inland Steel Co.	Indiana Harbor, Ind.	GE
134	3000	250	6600	25 cy.	18" Cont. Billet Mill	Geared	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
135	3000	375	2200	25 cy.	18" Billet Mill	Geared	1916	Donner Steel Co.	Buffalo, N. Y.	GE
136	3000	375	6600	25 cy.	24" Sheet Bar Mill	Geared	1922	Otis Steel Co.	Cleveland, Ohio	GE
137	3250	94	6600	25 cy.	18" Sheet Bar Mill	Direct	1916	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
138	3500	92	2200	60 cy.	18" Sheet Bar Mill	Direct	1916	Trumbull Steel Co.	Warren, Ohio	GE
139	3500	92	2200	60 cy.	21" Sheet Bar Mill	Direct	1918	Trumbull Steel Co.	Warren, Ohio	GE
140	4000	83	6600	25 cy.	24" Cont. Billet Mill	Direct	1916	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
141	4000	93	6600	60 cy.	18" Continuous Bar Mill	Direct	1919	Weirton Steel Co.	Weirton, W. Va.	W
142	4000	93	6600	60 cy.	21" Continuous Bar Mill	Direct	1919	Weirton Steel Co.	Weirton, W. Va.	W
143	4000	360	2200	60 cy.	21" Sheet Bar Mill	Geared	1917	Sharon Steel Hoop Co.	Lowellville, Ohio	GE
144	4200	93	2200	60 cy.	Continuous Bar Mill	Direct	1915	United Alloy Steel Corporation	Canton, Ohio	W
145	5000	99	13200	60	18" Billet Mill	Direct	1925	Ford Motor Company	Detroit, Mich.	W
146	5000	450	2300	60 cy.	18" Cont. Sheet Bar & Billet Mill	Geared	1919	Wheeling Steel Corp.	Portsmouth, Ohio	GE
147	5000	594	6600	60 cy.	Sheet and Billet Mill	Geared	1924	Tenn. Coal, Iron & R. R. Co.	Birmingham, Ala.	GE
148	5750	94	6600	25 cy.	21" Cont. Billet Mill	Direct	1914	McKinney Steel Co.	Cleveland, Ohio	GE
149	5750	94	6600	25 cy.	18" Bar Mill	Direct	1915	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
150	5750	94	6600	25 cy.	21" Bar Mill	Direct	1921	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
151	5750	94	6600	25 cy.	18" Billet Mill	Geared	1923	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
152	5750	94	6600	25 cy.	21" Billet Mill	Geared	1923	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
153	6000	83	6600	25 cy.	32" Billet Mill	Direct	1907	Illinois Steel Co.	Gary, Ind.	GE
154	6000	83	6600	25 cy.	24" Billet Mill	Direct	1907	Illinois Steel Co.	Gary, Ind.	GE
155	6000	83	6600	25 cy.	18" Billet Mill	Direct	1907	Illinois Steel Co.	Gary, Ind.	GE
156	6000	83	6600	25 cy.	18" Sheet Bar Mill	Direct	1910	Illinois Steel Co.	Gary, Ind.	GE
157	6250	368	2200	25 cy.	24" Cont. Billet Mill	Geared	1922	Inland Steel Co.	Indiana Harbor, Ind.	W
158	7500	375	2200	25	19" Cont. Bar & Billet Mill	Geared	1926	Inland Steel Co.	Indiana Harbor, Ind.	W
159	9000	107	6600	25	Cont. Billet Bar Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	GE

COLD ROLL DRIVES

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	300	300	230	d.c.	Cold Roll Mill	Geared	1914	Trumbull Steel Co.	Warren, Ohio	W
2	300	300	230	d.c.	Cold Roll Mill	Geared	1920	Alan Wood Iron & Steel Co.	Conshohocken, Pa.	W
3	300	340	2200	60 cy.	Cold Roll Mill	Geared	1921	Newton Steel Co.	Newton Falls, Ohio	W
4	300	350	2200	60 cy.	Cold Roll Mill	Geared	1915	Mansfield Sheet & Tin Plate Co.	Mansfield, Ohio	W
5	300	350	2200	60 cy.	Cold Roll Mill	Geared	1916	Wheeling Steel Corporation	Wheeling, W. Va.	W
6	300	350	2200	60 cy.	Cold Roll Mill	Geared	1916	Wheeling Steel Corporation	Portsmouth, Ohio	W
7	300	350	2200	60 cy.	Cold Roll Mill	Geared	1916	Wheeling Steel Corporation	Portsmouth, Ohio	W
8	300	350	2200	60 cy.	Cold Roll Mill	Geared	1916	Wheeling Steel Corporation	Portsmouth, Ohio	W
9	300	350	2200	60 cy.	Cold Roll Mill	Geared	1916	Wheeling Steel Corporation	Portsmouth, Ohio	W
10	300	352	2200	60 cy.	Cold Roll Mill	Direct	1923	Sharon Steel Hoop Co.	Youngstown, Ohio	W
11	300	353	2200	60 cy.	Cold Rolls	Geared	1923	Reeves Mfg. Co.	Dover, Ohio	GE
12	300	360	2200	60 cy.	Sheet Mill—Cold Rolls	Geared	1922	U. Alloy Steel Corp., Berger Div.	Canton, Ohio	GE
13	300	360	2300	60 cy.	Cold Rolls	Geared	1923	Ashtabula Steel Co.	Ashtabula, Ohio	GE
14	300	363	220	25 cy.	Cold Roll Mill	Geared	1919	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
15	300–300	400–800	230	d.c.	Cold Strip Mill	Geared	1913	Weirton Steel Co.	Weirton, W. Va.	GE
16	300–300	400–800	230	d.c.	Cold Strip Mill	Geared	1913	Weirton Steel Co.	Weirton, W. Va.	GE
17	300–300	400–800	230	d.c.	Cold Strip Mill	Geared	1913	Weirton Steel Co.	Weirton, W. Va.	GE
18	300–300	400–800	230	d.c.	Cold Strip Mill	Geared	1913	Weirton Steel Co.	Weirton, W. Va.	GE
19	300–300	400–800	230	d.c.	20x24" Cold Strip Mill	Geared	1919	Trumbull Steel Co.	Warren, Ohio	GE
20	300–300	400–800	230	d.c.	20x24" Cold Strip Mill	Geared	1919	Trumbull Steel Co.	Warren, Ohio	GE
21	300–300	400–800	230	d.c.	20x24" Cold Strip Mill	Geared	1919	Trumbull Steel Co.	Warren, Ohio	GE
22	300–300	400–800	230	d.c.	20x24" Cold Strip Mill	Geared	1919	Trumbull Steel Co.	Warren, Ohio	GE
23	300	440	2200	60 cy.	Cold Roll Mill	Geared	1924	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
24	300	440	2200	60 cy.	Cold Roll Mill	Geared	1924	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
25	300	485	2200	25 cy.	Cold Roll Mill	Direct	1916	Halcomb Steel Co.	Syracuse, N. Y.	W
26	300	514	550	60 cy.	14" Cold Strip Mill	Geared	1922	Wallingford Steel Co.	Wallingford, Conn.	GE
27	300	575	2200	60 cy.	Cold Roll Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
28	300	575	2200	60 cy.	Cold Roll Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
29	300	575	2200	60 cy.	Cold Roll Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
30	300	575	2200	60 cy.	Cold Roll Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
31	300	600	2200	60 cy.	Cold Sheet Mill Rolls	Geared	1923	Falcon Steel Co.	Niles, Ohio	GE
32	320	400–800	230	d.c.	Cold Strip Drive	Geared	1926	International Nickle Co.	Huntington, W. Va.	AC
33	350	145	2200	60 cy.	Cold Roll Mill	Rope	1912	Massillon Rolling Mill Co.	Massillon, Ohio	W
34	350	345	440	60 cy.	Cold Roll Mill	Geared	1910	Oliver Iron & Steel Co.	Wilson, Pa.	W
35	350	360	2200	60 cy.	Sheet Mill—Cold Rolls	Geared	1919	Falcon Steel Co.	Niles, Ohio	GE
36	375	430–860	230	d.c.	20" Cold Roll Mill	Geared	1922	Otis Steel Co.	Cleveland, Ohio	W
37	375	430–860	230	d.c.	20" Cold Roll Mill	Geared	1922	Otis Steel Co.	Cleveland, Ohio	W
38	375	430–860	230	d.c.	20" Cold Roll Mill	Geared	1922	Otis Steel Co.	Cleveland, Ohio	W
39	375	430–860	230	d.c.	20" Cold Roll Mill	Geared	1922	Otis Steel Co.	Cleveland, Ohio	W
40	375	430–860	230	d.c.	20" Cold Roll Mill	Geared	1922	Otis Steel Co.	Cleveland, Ohio	W

COLD ROLL DRIVES—Continued

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
41	375	430-860	230	d.c.	Cold Strip Mill	Geared	1925	Otis Steel Co.	Cleveland, Ohio	GE
42	375	430-860	230	d.c.	Cold Strip Mill	Geared	1925	Otis Steel Co.	Cleveland, Ohio	GE
43	400	290	2200	60 cy.	Cold Roll Mill	Geared	1916	Youngstown Sheet & Tube Co.	Warren, Ohio	W
44	400	290	2200	60 cy.	Cold Roll Mill	Geared	1917	Liberty Steel Co.	Warren, Ohio	W
45	400	360	2200	60 cy.	Sheet Mill, Cold Rolls	Geared	1916	Mahoning Valley Steel Co.	Niles, Ohio	GE
46	400	360	2200	60 cy.	Sheet Mill, Cold Rolls	Geared	1916	Mahoning Valley Steel Co.	Niles, Ohio	GE
47	400	360	2200	60 cy.	Cold Roll Sheet Mill	Geared	1918	Reeves Mfg. Co.	Canal Dover, Ohio	GE
48	400	360	440	60 cy.	Cold Strip Mill	Geared	1921	Am. Tube and Stamping Co.	Bridgeport, Conn.	GE
49	400	400-800	230	d.c.	Cold Strip Mill	Geared	1926	Trumbull Steel Co.	Warren, Ohio	GE
50	400	500-1000	600	d.c.	Cold Strip Mill	Geared	1926	Forged Steel Wheel Co.	Butler, Pa.	AC
51	400	500-1000	600	d.c.	Cold Strip Mill	Geared	1926	Forged Steel Wheel Co.	Butler, Pa.	AC
52	400	500-1000	600	d.c.	Cold Strip Mill	Geared	1926	Forged Steel Wheel Co.	Butler, Pa.	AC
53	400	500-1000	600	d.c.	Cold Strip Mill	Geared	1926	Forged Steel Wheel Co.	Butler, Pa.	AC
54	400	575	2200	60 cy.	Cold Roll Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
55	400	575	2200	60 cy.	Cold Roll Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
56	400	575	2200	60 cy.	Cold Roll Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
57	400	575	2200	60 cy.	Cold Roll Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
58	450	375	440	25	Cold Roll Mill	Geared	1925	Seneca Iron & Steel Co.	Blasdell, N. Y.	CW
59	450	514	550	50 cy.	14" Cold Strip MillP	Geared	1922	Wallingford Steel Co.	Wallingford, Conn.	GE
60	500	250	6600	25 cy.	Sheet Mill Cold Rolls	Geared	1919	Bethlehem Steel Co.	Sparrows Point, Md.	GE
61	500	350	2200	60 cy.	Cold Roll Mill	Geared	1916	Mansfield Sheet & Tin Plate Co.	Mansfield, Ohio	W
62	500	350	440	60 cy.	Cold Roll Mill	Geared	1916	Andrews Steel Co.	Newport, Ky.	W
63	500	360	2200	60 cy.	Sheet Mill, Cold Rolls	Geared	1920	Central Steel Co.	Massillon, Ohio	GE
64	500	360	2200	60 cy.	Sheet Mill, Cold Rolls	Geared	1920	Central Steel Co.	Massillon, Ohio	GE
65	500	360	2200	60 cy.	Sheet Mill, Cold Rolls	Geared	1920	Republic Iron & Steel Co.	Youngstown, Ohio	GE
66	500	442	2200	60 cy.	Cold Roll Mill	Geared	1922	Follansbee Brothers Co.	Toronto, Ohio	W
67	500	450	550	60 cy.	12" Cold Roll Mill	Geared	1914	Worcester Pressed Steel Co.	Worcester, Mass.	GE
68	600	150	550	60 cy.	Sheet Mill, Cold Rolls	Rope	1909	Weirton Steel Co.	Weirton, W. Va.	GE
69	700	502	2200	60 cy.	Cold Roll Mill	Geared	1917	Carnahan Tin Plate & Sheet Co.	Canton, Ohio	W
70	750	100	2200	25 cy.	Tin Mill, Cold Rolls	Geared	1915	American Sheet & Tin Plate Co.	Gary, Ind.	GE
71	750	100	2200	25 cy.	Tin Mill, Cold Rolls	Geared	1915	American Sheet & Tin Plate Co.	Gary, Ind.	GE
72	750	125	2200	25 cy.	Tin Mill, Cold Rolls	Rope	1915	McKeesport Tin Plate Co.	McKeesport, Pa.	GE
73	750	125	2200	25 cy.	Tin Mill, Cold Rolls	Rope	1915	McKeesport Tin Plate Co.	McKeesport, Pa.	GE
74	750	240	2200	60 cy.	Sheet Mill, Cold Rolls	Geared	1919	Wheeling Steel Corp.	Steubenville, Ohio	GE
75	750	300-600	230	d.c.	Cold Rolling Mill	Geared	1924	International Nickel Co.	Huntington, W. Va.	AC
76	750	300-600	230	d.c.	Bliss Cold Roll Drive	Geared	1926	International Nickle Co.	Huntington, W. Va.	AC
77	800	375	2200	25 cy.	Sheet Mill, Cold Rolls	Geared	1919	Eastern Rolling Mills Co.	Baltimore, Md.	GE
78	1200	367	2200	25 cy.	Cold Roll Mill	Geared	1916	Bethlehem Steel Co.	Sparrows Point, Md.	W

SHEET BAR AND SKELP MILL DRIVES

No.	Horse Power	R.P.M.	Voltage	Current	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	350	500	230	d.c.	16" Cont. Skelp Mill	Geared	1924	Gary Tube Co.	Gary, Ind.	AC
2	500	180-360	600	d.c.	14"-12" Skelp Mill	Geared	1926	Wheeling Steel Corp.	Benwood, W. Va.	GE
3	550	575	2200	60 cy.	16" Skelp Mill	Geared	1919	Tyler Tube & Pipe Co.	Washington, Pa.	W
4	800	350	2200	60 cy.	24" Sheet Bar (B.H.) Mill	Geared	1915	Central Steel Co.	Massillon, Ohio	W
5	1000	125	230	d.c.	Sheet Bar Mill	Geared	1920	Allegheny Steel Co.	Brackenridge, Pa.	GE
6	1000	209	6600	25 cy.	14" Cont. Skelp Mill	Coupled	1924	Gary Tube Co.	Gary, Ind.	AC
7	1000	293	6600	25 cy.	14" Cont. Skelp Mi..	Geared	1924	Gary Tube Co.	Gary, Ind.	AC
8	1000	600	2200	60 cy.	16" Skelp Mill	Geared	1923	Elyria Iron & Steel Co.	Elyria, Ohio	GE
9	1100	214-320	600	d.c.	12" Skelp Mill	Direct	1926	Bethlehem Steel Co.	Sparrows Point, Md.	W
10	1100	240-382	600	d.c.	12" Skelp Mill	Direct	1926	Bethlehem Steel Co.	Sparrows Point, Md.	W
11	1250	294	6600	25 cy.	14" Cont. Skelp Mill	Coupled	1924	Gary Tube Co.	Gary, Ind.	AC
12	1500	234	2200	60 cy.	26" Sheet Bar Mill	Geared	1916	Canton Sheet Steel Co.	Canton, Ohio	W
13	1500	270	2200	60 cy.	24" Sheet Bar Mill	Geared	1914	Central Steel Co.	Massillon, Ohio	W
14	1500	270	2200	60 cy.	22" Sheet Bar, Billet Mill	Geared	1918	Central Steel Co.	Massillon, Ohio	W
15	1500	277	2200	60	22" Skelp Mill	Direct	1924	Bethlehem Steel Corp.	Coatesville, Pa	GE
16	1500	322-193	2200	60	18" Sheet Bar Mill	Geared	1926	Columbia Steel Co.	Pittsburgh, Calif.	W
17	1500	368	2200	25 cy.	Sheet Bar (Fin.) Mill	Geared	1923	Inland Steel Co.	Chicago, Ill.	W
18	1500	450	2200	30 cy.	3 High Skelp Mill	Geared	1915	Spang Chalfant Co.	Etna, Pa.	GE
19	1500	491	6600	25 cy.	14" Cont. Skelp Mill	Geared	1924	Gary Tube Co.	Gary, Ind.	AC
20	1500	705	2200	60	Skelp Mill Scarfing Stand	Geared	1923	Bethlehem Steel Corp.	Coatesville, Pa.	AC
21	1800	275-550	600	d.c.	12" Skelp Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	W
22	1800	275-550	600	d.c.	12" Skelp Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	W
23	2000	50-100	600	d.c.	30" Rev. Sheet Bar Mill	Direct	1919	Follansbee Brothers Co.	Toronto, Ohio	W
24	2000	85-165	600	d.c.	21" Continuous Sheet Bar and Skelp Mill	Direct	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE
25	2000	85-165	600	d.c.	21" Continuous Sheet Bar and Skelp Mill	Direct	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE
26	2000	85-165	600	d.c.	21" Continuous Sheet Bar and Skelp Mill	Direct	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE
27	2000	200-400	600	d.c.	14"-12" Skelp Mill	Geared	1926	Wheeling Steel Co.	Benwood, W. Va.	GE
28	2000	200-400	600	d.c.	14"-12" Skelp Mill	Geared	1926	Wheeling Steel Co.	Benwood, W. Va.	GE
29	2000	200-400	600	d.c.	14"-12" Skelp Mill	Geared	1926	Wheeling Steel Co.	Benwood, W. Va.	GE
30	2000	234-161	2200	60 cy.	10" Skelp (Fin.) Mill	Belted	1916	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
31	2000-2000	250-161	6600	25 cy.	10" Skelp Mill	Geared	1915	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
32	2000	294	6600	25 cy.	14" Cont. Skelp Mill	Coupled	1924	Gary Tube Co.	Gary, Ind.	AC
33	2000	350-234	2200	60 cy.	10" Skelp (Rough.) Mill	Geared	1916	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
34	2300-1300	115.4-65	6600	25 cy.	10" Skelp Mill	Geared	1915	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
35	2500	146	6600	25 cy.	16" Cont. Skelp Mill	Coupled	1924	Gary Tube Co.	Gary, Ind.	AC
36	2500	184	6600	25 cy.	Skelp Mill	Rope	1908	National Tube Co.	Lorain, Ohio	W
37	2500	184	6600	25 cy.	Skelp Mill	Rope	1908	National Tube Co.	Lorain, Ohio	W
38	2500	252	2200	60 cy.	Skelp Mill	Geared	1917	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
39	2500	252	2200	60 cy.	Skelp Mill	Geared	1917	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
40	2500	295	6600	25 cy.	16" Cont. Skelp Mill	Coupled	1924	Gary Tube Co.	Gary, Ind.	AC
41	2600	320-275	600	d.c.	26" & 21" Cont. Skelp Mill	Direct	1926	Bethlehem Steel Co.	Sparrows Point, Md.	GE
42	3000	184	6600	25 cy.	16" Cont. Skelp Mill	Coupled	1924	Gary Tube Co.	Gary, Ind.	AC
43	3000	354-212	2200	60 cy.	Skelp Mill	Geared	1920	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
44	3000-2250-1500	500-375-250	2200	25	24" Sheet Bar Mill	Geared	1926	Inland Steel Co.	Indiana Harbor, Ind.	GE
45	3600-1940	290-156	2200	60	21" Continuous Sheet Bar and Skelp Mill	Geared	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE
46	4000	80	650	d.c.	30" Universal Skelp Mill	Direct	1922	Youngstown Sheet & Tube Co.	Youngstown, Ohio	GE
47	4000	83.3	6600	25	26" x 21" Cont. Skelp Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	GE
48	4500	120-255	750	d.c.	Univ. Skelp Mill	Coupled	1925	Gary Tube Co.	Gary, Ind.	AC
49	5500	370	6600	25 cy.	16" Cont. Skelp Mill	Geared	1924	Gary Tube Co.	Gary, Ind.	AC
50	6500	187.5	6600	25	26" x 21" Cont. Skelp Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	GE
51	6700-5000-3320	500-375-250	6600	25	26" x 21" Cont. Skelp Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	GE
52	7500-4040	250-134	2200	60	21" Continuous Sheet Bar and Skelp Mill	Geared	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE

A. I. & S. E. E.
Standardized Commutating Pole Mill Type Motor
Final Report of Standardization Committee

A. C. CUMMINS, Chairman

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J. F. CHAPMAN, Elec., Engr., Colorado Fuel & Iron Co., Pueblo, Colo.

THE Standardization Committee presents in this issue of the "Iron and Steel Engineer" the final dimensions agreed upon by the Manufacturers and the Committee as those most desirable for the Association's Standardized Mill Type Motor. As compared to the dimensions published in the October issue, it will be found that some slight changes have been necessary, and it is particularly desired that the tables published in October be disregarded and the new tables now appearing be used in the future.

There is also included a table of the axleshaft bearing details showing the dimensions that have been agreed upon for the axleshaft bearing mountings. Axleshafts and gears will be entirely interchangeable so long as anti-friction bearings are used in the axleshafts. With sleeve bearings, the gearing and shafts will be interchangeable but the sleeve bearing shells will not be duplicates in all cases. Attention is called to the fact that the 200 Series bearings used in the axleshafts will permit the use of standard axleshaft diameters. Axleshaft diameters may be somewhat increased if the user desires by substituting a thin shell bearing in place of the anti-friction bearing capsule. The dimensions for such practice are not standardized upon and will have to be settled between the individual user and the manufacturer whose motor is purchased. The Committee has also added the standardized gear dimensions. The standardization of this feature became necessary in order to standardize gear shield fits and bearing dimensions.

In order that the members of the Association may be given a picture of the general features of the new motor, three photographic reproductions are published at this time. Figure 1 is an experimental 25 HP motor with the frame open, exposing the interior of the motor. Attention is called particularly to the following features:

(1.) The frame is split and hinged. The split occurring a little above the center line of the armature shaft.

(2.) The elevation of the split in the motor frame permits fastening the interpoles permanently to the lower half of the frame.

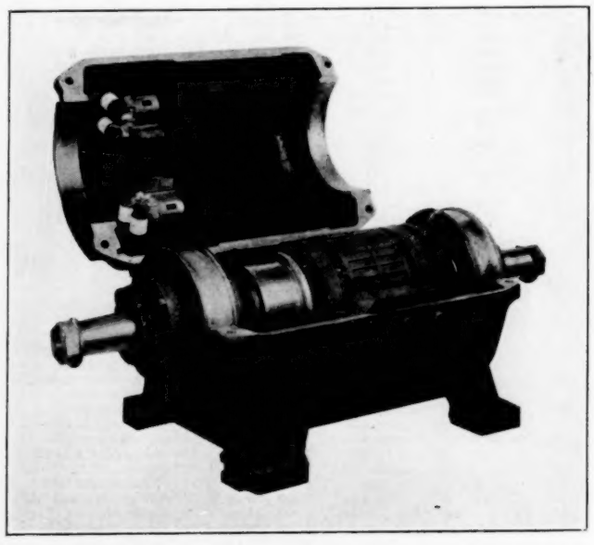


FIG. 1.

(3.) The brushholders are mounted in the upper half and are readily accessible.

(4.) The bearings are mounted in large capsules in which either sleeve or roller bearings may be used.

Inspection of Figure 1 might give the impression that the bolts holding the two halves of the frame together are small, and to correct any misapprehen-

sion, it may be stated that commercial motors will have larger bolts at this point.

Figure 2 is a view of the commutator end of the new motor with the top half in the normal position. An effort has been made to keep the lid over the commutator opening below the top of the frame. In some mill type motors the commutator cover is the maximum dimension as far as heighth is concerned and in restricted clearance frequently proves a handicap. The dimensions of the gear shield fits on the bearing are standardized so that the holes in all gear cases will be such as to permit interchange-

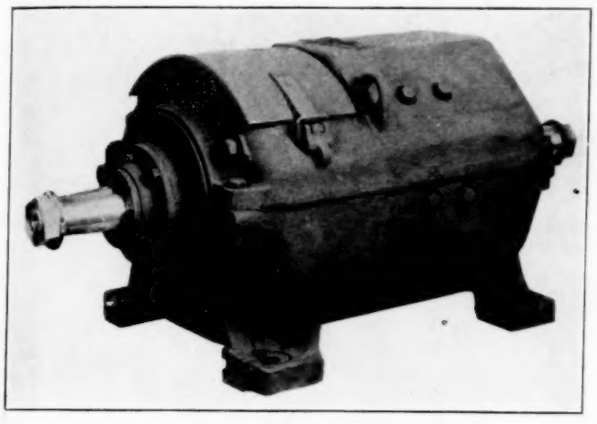


FIG. 2.

ability when gear cases are separately mounted. It was not possible to arrange the lugs on the different makes of motors so that gear cases could be made perfectly interchangeable. It may later be found that casting double lugs on the gear cases will permit full interchangeability. The feet have been made quite rugged without infringing on the space required in the frame.

Figure 3 is a photograph of the open type frame and indicates that something has been accomplished in securing protection as well as ventilation. The Standardization Committee did not attempt to specify electrical characteristics for open type motors as it was felt that the enclosed type should be the basis of design and the open type should be allowed to follow at whatever ratings were possible so long as the mechanical dimensions duplicated the closed type. It is probable that these motors may be used to advantage for hoist and shear duty where it has previously been necessary to apply general purpose motors. If this prediction proves correct, it will be possible to secure the greater accessibility and ease of repair which the mill type motor offers for many new applications.

As explained in some of the preliminary reports of the work of the Committee, sales reports of the different manufacturers indicated that purchases of motors larger than 75 HP mill rating in steel mills represented but a small percentage of the total business and therefore the activities of the Association were limited to the smaller sizes. If the future trend in steel mill electrical practice indicates that standardization of the larger sizes is required, it should be possible to enlarge the scope of the present size range, because the progress of the work indicated that the larger the motor, the more readily the manufacturers could agree upon standardized dimensions.

The Committee wishes to offer its services to any members of the Association who wish additional information regarding the new standardized motor. Any enquiries should be addressed to the Chairman, Standardization Committee, Association of Iron & Steel Electrical Engineers, 705 Empire Bldg., Pittsburgh, Pa.

Should any one care to go through the procedure which led up to the final agreement, they are referred to the October issue of the "Iron and Steel Engineer," as a complete resume of the proceedings of the various meetings of the Committee has been included in the report published at that time.

In conclusion the Committee wishes to again express its appreciation of the way in which the Manufacturers co-operated with the Association in this

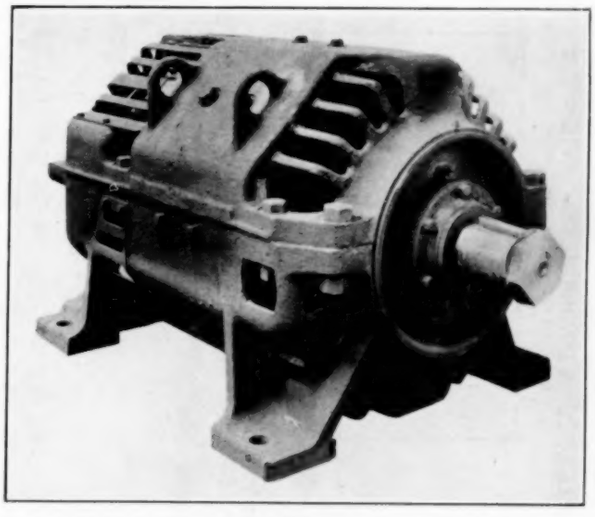
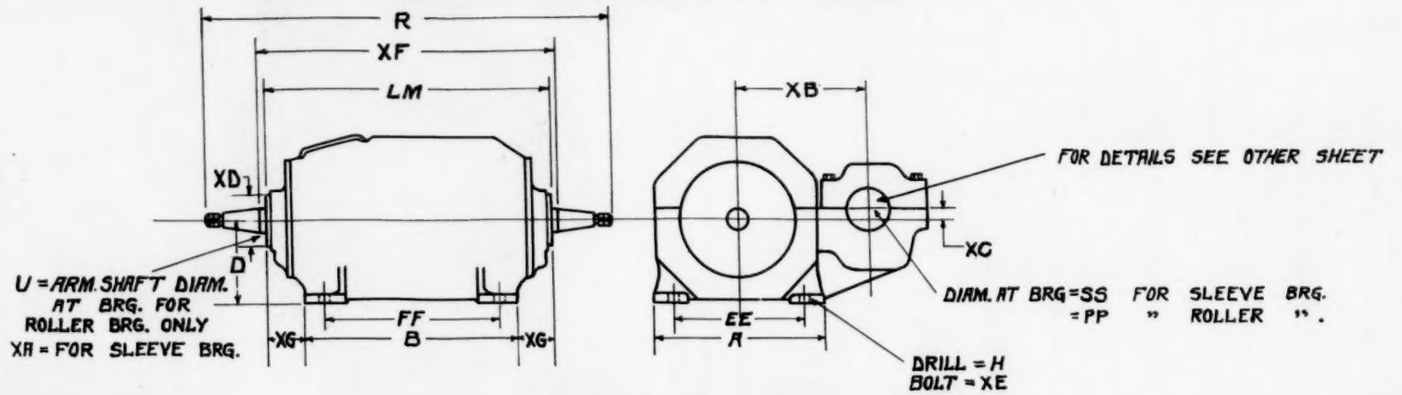


FIG. 3.

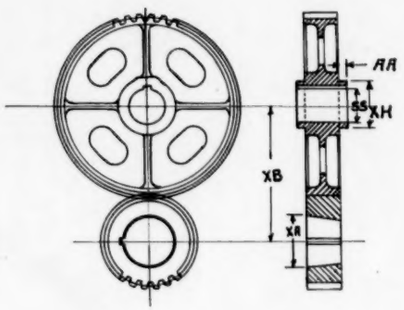
project. When it is recalled that the first time the subject was broached was at a General Committee Meeting in Duquesne in December, 1925, that the preliminary dimensions were published in October, 1926, that the final agreements were announced in January, 1927, or about thirteen months after the project was started, remarkable progress was made. A precedent has been set for the completion of work of this nature on the part of any of the National Engineering Societies. The results are conclusive evidence of the wonderful spirit with which all concerned helped accomplish a difficult task.

A.I.&S.E.E. STANDARDIZED INTERPOLE MILL MOTOR DIMENSIONS

COMPILED BY STANDARDIZATION COMMITTEE A.I.&S.E.E. JAN.-13-1927



FRAME NO	RATING & SPEED +MILL HP.	RPM	‡CRANE HP.	RPM	TORQUE LB. FT. MILL	CRANE	GEAR RATIO STD.	OVERALL DIMENSIONS IN INCHES EE	A	FF	B	D	XB	LM	XF	R	PINION FACE	PITCH	ARM. SHAFT KEY WIDTH	HEIGHT	AXLE SHAFT KEY WIDTH	HEIGHT	H	XE	SS	U	XG	XC	FRAME NO.
A	7½	800	10	690	49	76	4.94	14	17	18	21	8½	12.625	29	30	39¼	3½	4	½	½	¾	½	2 3/32	⅞	3⅛	2.1654	4	1	A
B	10	725	13	625	72	109	4.94	15	18	19	22	9	13.375	31	32	41¼	3½	4	½	½	¾	½	2 3/32	⅞	3½	2.1654	4½	1	B
C	15	650	20	560	121	188	5.05	16½	20	21	24½	10	14.875	34	35	45¼	4	4	½	½	1	¾	1 1/32	1	3⅞	2.5591	4¾	1⅛	C
D	25	575	33	495	228	350	4.94	18¾	22¾	24¾	28½	11¼	16.833	39	40	51½	4½	3	¾	½	1	¾	1 3/16	1⅛	4⅝	3.1496	5¼	1⅛	D
E	35	525	45	455	350	520	4.94	20½	24½	26	30½	12¼	17.833	42½	43½	55½	4½	3	¾	½	1	¾	1 3/16	1⅛	4⅞	3.3465	6	1⅛	E
F	50	500	65	430	525	795	5.05	22½	27	28½	33	13⅜	19.166	47	48	61	5	3	¾	½	1¼	⅞	1 5/16	1¼	5⅛	3.7402	7	1¼	F
G	75	475	100	410	830	1280	5.05	25	30	32	37½	14¾	21.800	52½	53½	66¾	5	2½	1	¾	1½	1	1 7/16	1½	5⅞	4.3307	7½	1¼	G



NOTES

+MILL RATING (BASIC RATING) 1HR. CONTINUOUS RUN TEMP. = 75°C

‡CRANE " (APPROX. ONLY) ½ HR. " RUN TEMP. = 75°C.

Δ = LIMITING DIMENSION

STANDARD SHAFT TAPER = 1.25" PER FOOT

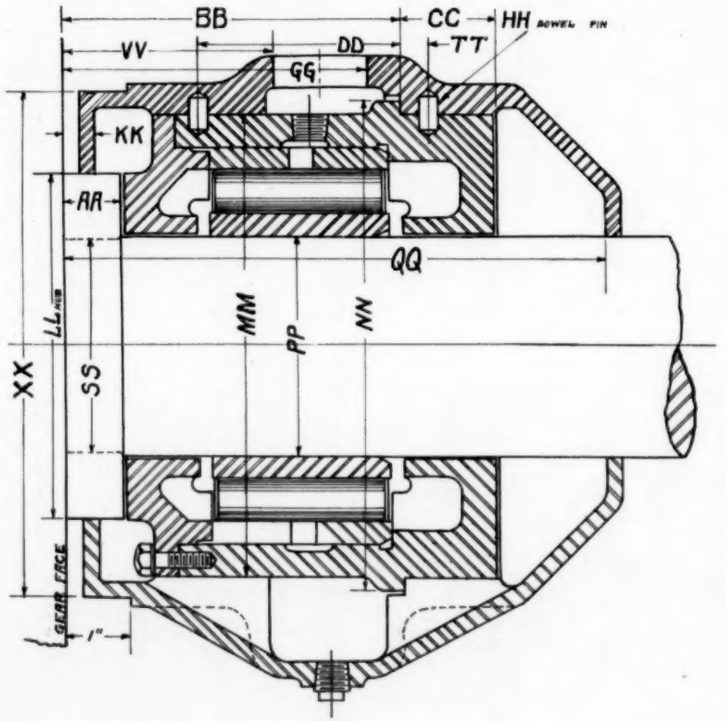
" " NUTS = 8 THREADS PER INCH

KEYWAY TO BE CUT PARALLEL TO TAPER — CUTTER TO BE RUN OUT.

FRAME NO	XD	XA	XH	ANTI-FRICTION BRG. NO.	STANDARD GEAR RATIOS PINION	GEAR	PITCH	GEAR BELOW CASE	FRAME NO.
A	5½	2	5	311	17	84	4	2½	A
B	5½	2	5½	311	18	89	4	2⅝	B
C	6¼	2½	6	313	20	99	4	2¾	C
D	7¼	3	6½	316	17	84	3	3¼	D
E	8	3¼	7	317	18	89	3	3	E
F	8¾	3⅝	8	319	19	96	3	3	F
G	10	4¼	9	322	18	91	2½	4¼	G

A.I.&S.E.E. STANDARDIZED MILL MOTOR AXLE-SHAFT DETAILS

COMPILED BY STANDARDIZATION COMM. A.I.&S.E.E. JAN. 11-1921



FRAME NO.	MOTOR H.P.	DIMENSIONS IN INCHES. AA	BB	CC	DD	TT	VV	GG	HH	KK	LL	MM	NN	PP	FRAME NO.
A	7½	⅞	5	1⅜	2⅞	½	3	4½	⅜	½	5	6.500	7	3.1496	A
B	10	1	5⅜	1½	3⅛	½	3⅜	4⅞	⅜	½	5½	7.3125	7¾	3.5433	B
C	15	1	5⅞	1¾	3½	½	3⅝	5⅛	⅜	½	6	8.125	8⅝	3.9370	C
D	25	1⅛	6⅜	2	3⅞	⅝	4	5½	½	9/16	6½	9.125	9⅝	4.3307	D
E	35	1⅛	6⅞	2	4½	⅝	4⅜	5⅞	½	9/16	7	9.750	10¼	4.7244	E
F	50	1¼	7½	2¼	4⅞	¾	4¾	6¼	½	9/16	8	10.375	10⅞	5.1181	F
G	75	1¼	8½	2½	5¾	¾	5½	7	½	9/16	9	12.000	12⅝	5.9055	G

FRAME NO.	QQ	SS	XX	ANTI-FRICTION BEARINGS 200 SERIES	300 SERIES
A	7¾	3⅛	7¾	W-216	313
B	8½	3½	8½	W-218	315
C	9¼	3⅞	9½	W-220	317
D	10¼	4⅝	10½	W-222	319
E	10⅞	4⅞	11¼	W-224	320
F	11⅞	5⅛	11⅞	W-226	321
G	13⅞	5⅞	13½	W-230	322

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Items of Interest

At the meeting of the Board of Directors of Colt's Patent Fire Arms Mfg. Co., on December 23, at Hartford, Connecticut, one of the most important changes in the corporate personnel of the electrical industry was made. This, to be exact, consists of the total absorption of The Johns-Pratt Company by Colt's Patent Fire Arms Mfg. Co.

The Johns-Pratt Company, for years one of the foremost manufacturers of Sheet Packing, has more recently come prominently before the electrical industry of the country as the pioneer developer of such electrical protective devices as Motor Service Switches, Fuses, Service Boxes and high-voltage Underground Equipment.

The control of The Johns-Pratt Company has, for a few years past, rested in the Colt's Patent Fire Arms Mfg. Co., and its activities carried on as a division of the controlling organization; but now that Colt's Board of Directors has taken the action it has, The Johns-Pratt Company will cease to function as a commercial entity.

Those in the electrical industry who are familiar with the ninety yards of manufacturing experience, the unparalleled facilities for production, and the unlimited financial resources of Colt's will see in this absorption, not just the passing of a fine, old concern, but rather the opening up of an era of development and enlargement in the lines so ably pioneered and so intelligently standardized by The Johns-Pratt Company.

The Johns-Pratt Company was established in Hartford in 1886. At first, its main activity was the development and production of Sheet Packing and Pump Valves under the trade name "Vulcabeston." From this beginning, its products in this field have multiplied to cover practically every packing requirement in Power Plants, Factories, etc.

About 1898 this concern undertook the development of the line of electrical protective devices known to the industry as "Noark" products. Not only did it originate the idea of steel-clad protection of Meter Entrance Equipment, but finally consolidated the several different units employed for this purpose into a highly standardized Motor Service System which comprises all Service Entrance Switches, Fuses, Wires, Testing Clips, Cut-outs, etc., in a Sheet Steel Cabinet affording the Central Station positive protection against unwarranted meddling, and gave the electrical contractors the highly standardized unit in forms to meet the various Central Station requirements as to Meter Entrances.

In addition to this, it undertook and successfully carried through the development of Service Boxes for localizing the fusing and control of power lines in isolated and exposed locations. And, again, its Underground Equipment not only met—but kept pace with—the demand on the part of Central Station engineers for the sectionalization of Underground Transmission.

Since the adoption of illuminating gas to replace acetylene, hydrogen and other fuel gases in combination with oxygen for metal cutting, the General Electric plants have found many valuable uses for this new metal cutting tool.

The new method reduces gas costs, as the illuminating gas used is cheaper than either hydrogen or acetylene. The principal advantages are (1) availability; (2) elimination of delays and handling of tanks; (3) low cost; (4) safety, and (5) chemical and physical properties permitting the use of the gas in a torch equipped with a superheater, thus effecting marked economies in the amount of oxygen required by the cutting jet.

The Square D Company have announced the addition of a new accessible main fuse switch, with distribution cabinet, to their line.

This new type switch has main fuses which are accessible when the switch is "off." The switch has one fuse, one switch blade and a solid neutral. The distribution cabinet provides for two branch circuits. Wiring connections between the switch and the branches are made at the factory.

The Electrical Controller & Manufacturing Company of Cleveland, Ohio, announce a new Rotating Cam Limit Switch to be used with magnetic controllers for the automatic control of machines having such fixed sequence of operation as slowing down, stopping and reversing.

This Cam Type Limit Switch is totally enclosed, is equipped with tapered roller bearings and is designed to carry up to six sets of contacts. The cams which operate the opening and closing of the contacts, are each adjusted independently of the others and can be fixed at an infinite number of positions, thus giving extreme flexibility to the machine with which it is used.

The Graybar Electric Company, one year old on January first, will this year complete its fifty-eighth year in the business of making and distributing electrical supplies. This seeming paradox comes about by virtue of the fact that on January first, nineteen hundred and twenty-six, this company, known for half a century as Western Electric, changed its name to Graybar.

Under our new name, Graybar, we have had in 1926 the greatest business year in our history. We have added four distributing branches to our system, reaching from coast to coast, enlarged our organization and increased our selling facilities. Our business has never been as good—our prospects never any better.

1927 after all is just another name for the continuation of 1926. We see nothing on the business horizon that would lead us to look for any marked change in our business. This electrical business of which we are a part is so new, so broad, its ramifications touch so many industries and so many people that it is always susceptible of expansion.

While our books have not been closed for the year, we estimate sales of approximately $77,000,000 in 1926, as compared to a volume of $66,000,000 in 1925—which up to that time was our most satisfactory year. The next twelve months look very encouraging to us and we feel that Graybar will continue to grow as it has grown—and all our plans are based accordingly.

Two new bulletins have just been published by The Electric Controller & Mfg. Company of Cleveland, Ohio. These are Bulletins 1037-C and 1042-F.

Bulletin 1037-C describes Type B Limit Stops for use with alternating and direct current motors. These Limit Stops are used on electric cranes and any other motor driven machine which must be automatically stopped when reaching a given position.

Bulletin 1042-F describes EC&M Automatic Compensators for 110 to 550 volts AC Squirrel Cage and Synchronous Motors.

These bulletins will be sent to anyone interested upon receipt of their request.

SAFE STORAGE OF EXPLOSIVES

The method of construction of magazines for explosives and the situation of magazines in relation to other structures, roads, or workings, is governed by law in many States, says the Bureau of Mines in Technical Paper 400, recently published. Where there is a choice of location, storage magazines should be built at such a place that the explosive need be handled but a minimum number of times in order to bring it to the mine entrance.

As the explosives usually deteriorate with age, whenever it is practicable not more than a 30 days' supply of explosives should be contained in a storage magazine at any one time.

Fresh supplies of explosives should be so placed in magazines that the old stock may be used first. All of any particular class and grade of explosive on hand in a magazine when the supply is replenished should be used before any of that in the new lots.

Cases of any dynamites other than gelatins should be so piled that the cartridges lie horizontally, in order to lessen the possibility of leakage of nitroglycerine from the explosive. Gelatin dynamite may be piled in any position.

Only low-freezing explosives should be used in cold weather. No frozen explosives should be sent underground or used in any circumstances. Bureau of Mines Technical Paper 18, Magazines and Thaw Houses for Explosives, gives recommendations on the construction of thaw houses and on thawing frozen explosives. Copies of Technical Paper 18 and Technical Paper 400 may be obtained from the Bureau of Mines, Department of Commerce, Washington, D. C.

HAZARD OF MISSED HOLES

Drilling or picking into missed holes is one of the most frequent causes of blasting accidents in metal mines, states E. D. Gardner, mining engineer. Breau of Mines, in a recently issued publication. When it is known that a face contains an unexploded charge the hazard is greatly reduced, as before anyone does any other work at the face the missed hole can be reblasted by placing a new primer above the charge.

To count the detonation of shots in rounds and to report the missed holes is an almost universal practice. Occasionally, as in a large stope where a number of rounds are shot together, it is not practicable or possible to count the individual shots.

Where "V"-cut rounds are used, two or more charges often explode together and in consequence there is doubt as to whether any mis-fires have occurred. Under these conditions miners are more likely to pick or drill into missed holes in cleaning out the broken material.

Missed holes in drift rounds are usually easy to detect by an inspection of the face, and are generally identified by the fuse sticking from the hole. Missed lifters in drift rounds are sometimes not made evident by an inspection, and for this reason are more dangerous. Most miners load the lifters heavily so that the broken rock will be thrown back from the face on a shoveling sheet; this makes the detection of a misfire in a lifter easier. Missed holes in shafts or in underhand stopes are more hazardous than those in drifts because the unexploded charges are harder to find.

Arthur J. Whitcomb has recently resigned his position as Associate Editor of Industrial Engineer, published by the McGraw Hill Publishing Co, to become associated with Freyn Engineering Company.

Mr. Whitcomb was graduated from the University of North Dakota in 1916 with the degree of Bachelor of Science in Electrical Engineering. He immediately entered the employ of the Westinghouse Electric & Mfg. Company, taking the apprentice course for graduate engineers. Upon finishing this he became a Service Engineer operating from their Chicago district office and specializing on the electrification of steel mills in the immediate vicinity.

Mr. Whitcomb's war service included duties as Coast Defense Artillery Engineer. Upon the close of the war he returned to the Westinghouse Electric Mfg. Co., in his former capacity. Late in 1919 he joined the Steel and Tube Co., of America at its Indiana Harbor plant and for a period of three years was connected with this company both in the electrical engineering department and in the electrical operating department. During this period several new pipe mills, a power house and a Bessemer mill were designed and placed in operation.

In 1923 he became associated with the Wisconsin Steel Company, in the capacity of Assistant Electrical Engineer. Here he was connected with the placing in operation of new coal unloading equipment, the electrical layout and construction of an open hearth, two sub-stations and a new blooming mill.

Mr. Whitcomb then joined Industrial Engineer as Associate Editor specializing in the electrical operation of mills and factories and in particular on steel mills.

In his new connection with Freyn Engineering Company, Mr Whitcomb will serve as Assistant Electrical Engineer in co-operation with Mr. Gordon Fox, Electrical Engineer.

DEVELOPMENTS IN STEEL MILLS*

Certain general features of the industry influence all designs in connection with it. Labor costs are relatively high, hence it is vital that output be large and continuous, to keep this charge a minimum The equipment should withstand abuse, should embody all the "built-in" intelligence possible, and should be as safe as practicable, as regards life and limb. All these demands are best met by electric drive, which continues its rapid spread.

Rolling mills require huge power. One of the largest structural plants has been rebuilt with motor drives of record breaking size. The first mill was equipped a year ago with one 7000 hp. reversing motor, one 5000 hp. reversing motor and one 6000 hp. induction motor.

These machines having run a year successfully, another mill is being equipped with one 8000 hp. reversing motor, two 7000 hp. reversing motors and two 2000 hp. reversing motors.

The enormous power required in such work is indicated by the fact that the momentary peak capacity of the two sets of motors is nearly 120,000 hp. These two sets also have the largest total continuous capacity.

The 8000 hp. machine is the largest single armature motor ever built, both as to continuous hp. and maximum torque, and drives the largest blooming mill in the world.

The 2000 hp. motors operate the first independently driven edging rolls on a structural mill.

A new monthly tonnage record for electrically driven blooming mills was established by the rolling of 91,062 gross ton of ingots in March on a 40 in. blooming mill driven by a Westinghouse reversing motor equipment.

During the year there was placed in operation a 20 in. x 16 in. tandem hot strip mill drive comprising nine motors of 12,200 hp. total capacity, together with transformer substation, motor generator sets, and switching equipment, and also all auxiliary motors and control equipment. As compared with preceding mills, having four, this mill has six tandem finishing stands, each driven by individual direct-current motors of 1500 hp. and 1800 hp. capacity, designed to have inherent speed regulation of not more than 2% from no-load to full-load. This close speed regulation is necessary to avoid excessive looping or pulling steel in two between stands when rolling thin sections at high speed.

A valuable improvement in alternating current adjustable speed drives has been made by the building and placing in successful operation of one 770 hp. and two 1600 hp. equipments of the double range, frequency converter, constant torque type. They are rated as follows on the constant torque basis: Two machines were rated at 1440/1600/1760 hp. at 450/500/550 rpm and one machine at 630/700/770 hp. at 450/500/550 rpm. the supply being at 6600 volts, 25 cycles, 3 phase.

The speed variation is obtained by means of a frequency converter on the same shaft as the induction motor. This frequency converter is the only auxiliary rotating machine required.

The frequency converter slip rings are connected to a transformer supplied with 25 cycles from the line; the commutator end of the frequency converter is connected to the slip rings of the main motor. This arrangement always gives the correct frequency to introduce into the induction motor rotor. The initial adjustment of phase position is accomplished by making the frequency converter frame so that it may be rotated slightly and once adjusted the frame can be dowled in position. Speeds of 10% and 5% above or below synchronism are obtained by taps on the transformer. At synchronous speed the induction motor rings are short circuited. Power factor improvement up to about 100% P.F., at full load is obtained by means of a tertiary winding on the transformer, supplying a small out-of-phase voltage which is added to the speed regulating voltage.

Excellent commutation is obtained by means of interpoles which are excited with both series and shunt windings.

A 5000 hp., 99 rpm., 3-phase, 60 cycle, 13,200 volt, wound rotor induction motor has been built for a continuous billet mill drive. The motor is of particular interest in that it is the first mill drive built by Westinghouse for operation on higher than 6600 volts. Also due to the slow speed, the motor is of exceptionally large diameter.

An improvement has been made in the control for tandem mill drives using separately excited compound wound direct-current motors. This consists of an adjustable rheostat in the separately excited series field which is mechanically connected to the operating mechanism of the main shunt field rheostat so that the two rheostats are adjusted simultaneously. By the proper proportionment of resistance values the compounding excitation at all speeds may be made such that the speed change under load is less than 1½ per cent of the operating speed. The first installation using this system is in operation with very satisfactory results, and several other equipments are on order.

Despite the spread of electric drive especially in new plants, it is not often that old mills are completely electrified. The rapidity of the changes made more noteworthy the recent electrification of a plant which has produced steel for more than a century In less than three years from the first contract, all main and auxiliary drives were running electrically, the completion of the job being marked by the operation of a 3500 hp. reversing motor driving a 36 in. blooming mill last May. The earlier improvements, included the electrification of a 22 in. bar mill and a 24 in. structural mill, and the installation of a 2000 kw. rotary converter substation supplying direct current power to cranes and mill auxiliaries.

Automatic features which reduce the number of operators required, and speed up production characterize the auxiliary control on a structural and merchant mill, consistsing of a reversing rougher and five cross country finishing stands. After the steel leaves the roughing stand, all operations are fully automatic, the mill tables and transfers being started by flag switches or by interlocking from a preceding motion, and stopped by other flag switches or by limit switches at the end of the cycle of operation. The usually large operating crew has been limited to only a few men.

*Contributed by Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

A complete operating cycle every six seconds is made possible by an electro-pneumatic controller for the control of two 275 hp., 230 volt, direct-current motors in parallel driving a cutting-off machine.

Magnetic contactors, of the size required, would have been too sluggish. In addition, the electro-pneumatic control is much the more compact and rugged.

To prevent the drifting of metal back into reversing blooming mills, improvements have been made in the control for front and back roll tables. Two master switches are used, the No. 1 master rotating the tables toward the mill, and the No. 2 master rotating the tables away from the mill. In normal operation the No. 1 master only is used, the steel issuing onto a dead table, and the No. 2 master is used only when the piece becomes long or to convey the piece away from the mill after rolling is completed. On mills with well aligned roll table bearings, the rolls often drift the metal back into the mill. Dynamic braking is now applied to the drifting motors of the tables as soon as the other motors are energized, thus stopping the table and preventing the metal from being returned to the mill until the master switch has been moved to the opposite position.

DEVELOPMENTS IN STEEL MILLS*

The unprecedented activity during 1925 in the application of electric motors to steel-mill main-roll drives continued unabated during 1926. Over 140,000 h.p. of G-E motors were provided for the industry, bringing the total installed capacity of such motors to more than 960,000 h.p.

Several reversing mill equipments were placed in operation. One a 3000-h.p. 80/150-r.p.m. motor which replaced an engine drive on a 24-in. bar mill at the Indiana Harbor plant of the Inland Steel Company was of especial interest because of the remarkably short time taken for its installation. In 122 hr. from the time the mill was shut down the engine and its foundations had been removed, new foundations for the motor built, and the motor installed and connected to the mill ready for operation. This achievement lowers the previous record for a change-over from steam to electric drive by about 13½ days.

There will be installed at the Sparrows Point Point of the Bethlehem Steel Company a 21-in. continuous sheet-bar and skelp mill which will have three different types of driving motors. The first eight stands will be driven by synchronous motors, No. 1 being of 4000 h p., 83 r.p.m., and No. 2 of 6500 h.p., 187 r.p.m. The next three stands will be driven by an adjustable-speed induction motor with Scherbius speed regulating equipment, the motor being rated 6700/5000/3320 h.p., 500/375/250 r.p.m. This is the largest Scherbius controlled induction motor in this country. The finishing stand is driven by a 2600-h.p. 320/275-r.p.m. direct-current motor.

Another equipment at this same plant is the drive for a 46-in reversing slabbing mill; the motor being a double-unit machine rated 7000 h.p 50/100 r.p m.

*Contributed by the General Electric Co., Schenectady, N. Y.

Installations of continuous mills in which practically every stand is driven by an individual motor are becoming more numerous. At the South Chicago Plant of the Illinois Steel Company a 13-stand mill will be driven by 13 adjustable-speed direct-current motors totaling 10,500 h.p. At the Gary Works of the same company a 13-stand mill will be driven by 9 direct-current motors totaling 6500 h.p., and a 15-stand mill will have 11 motors totaling 5350 h.p.

Another example of this trend towards individual drive is at the plant of the Weirton Steel Company, where a new mill to be installed will be driven by three alternating-current and five direct-current motors having a total continuous capacity of 16,000 h.p. Power for the five direct-current motors will be obtained from two synchronous motor-generators, each consisting of one 4200-kv-a., 6600-volt synchronous motor and two 1500-kw., 600-volt direct-current generators. The five direct-current motors are started simultaneously by Ward Leonard control, utilizing the voltage of the four direct-current generators.

The Lukens Steel Company of Coatesville (Pa.) installed an 84-in. tandem plate mill in which both roughing and finishing stands are driven by direct-current reversing motors. Each mill is four-high with backing-up rolls carried in roller bearings. The roughing mill motor is rated 1200 h.p. 25/50 r.p.m. 330 volts. The finishing mill motor is a duplicate machine but rated 2500 h.p. 53/80 r.p.m 600 volts. The flywheel motor-generator consists of a 3000-h.p. 600-r p.m induction motor, a 25-ton flywheel, and three duplicate 1050-kw. 330-volt generators, one for the roughing mill motor and two in series for the finishing mill motor.

The existing capacity of turbine generators in steel-mill power stations was increased by over 100,000 kw. Among the larger units were two 20,000-kw. machines for the Fairfield Works of the Tennessee Coal, Iron and Railroad Company and a 20,000-kw. unit for the Sparrows Point Plant of the Bethlehem Steel Company. These are the largest turbine generators for steel-mill power stations.

The first isolated-phase switching equipment in an industrial plant was installed in the new generating station of the Franklin Works of the Bethlehem Steel Company at Johnstown (Pa.) The initial installation was followed by others at the plants of the Illinois Steel Company, Gary (Ind.), and Jones and Laughlin Steel Corporation, Woodlawn (Pa.).

Emmet Mercury Vapor Process

During the summer of 1925 a new type of mercury boiler and a new three-stage mercury turbine were installed at the Dutch Point Station of the Hartford Electric Light Company, replacing the fire-tube type of boiler and single-stage turbine installed in 1923.

Preliminary tests during the latter part of 1925 and early 1926 showed the necessity for making several minor changes and repairs to the mercury boiler. These were made and by the end of April, 1926, the boiler was again ready for operation. From then to the end of August the equipment carried commercial load during the day, being shut down at night and over week-ends.

During these periods of operation, certain tubes seemed to heat more than others and experiments proved that this irregularity arose from certain interference with the liquid circulation by the escape of vapor near the down circulation tubes. Improvements were adopted to prevent the possibility of such interference and were applied to the Hartford boiler.

Since this change was effected in the Hartford boiler the apparatus has been operated at the highest loads which the generator is capable of carrying The heating of all boiler tubes is apparently uniform and everything indicates a stability of action with a very wide margin of capacity. The furnace was altered to burn pulverized coal, replacing the oil burners previously used.

This boiler installed at Hartford consists of vertical dead-ended tubes of strong construction welded into headers at the upper ends. The tubes are thus free to expand without involving expansion strains and each tube is provided with individual circulation of the liquid. The furnace is built directly below the mercury boiler so that all the boiler tubes are equally exposed to the radiant heat from the fire. The heat concentration, therefore, is distributed alike on all the tubes.

The single-stage mercury turbine with generator installed at Hartford in 1923 was 60 per cent efficient. The present three-stage turbine unit has an efficiency of 70 per cent which agrees with expectations derived from calculations. From these results it is believed that a five-stage machine would be about 75 per cent efficient. During September the three-stage turbine was examined and its condition indicates that mercury turbines can be operated for long periods of time without any part requiring renewal.

It is expected that a large commercial mercury unit will be constructed for installation at the South Meadow Station of the Hartford Electric Light Company. It is estimated that it will consume 14,400 lbs. of coal per hour and will deliver 10,000 kw. from the mercury generating unit. In addition, the condensing mercury will generate 124,000 lbs. of steam per hour which will be superheated up to 750° F.

Mercury-Arc Power Rectifiers

During the year several installations of steel-tank mercury-arc rectifiers were made in the United States.

The superior efficiency of this device, especially at the higher voltages and also on light-load service, makes its adaptation particularly attractive to railway power users. The installations which were completed include the following:

United Traction Co.	One 500-kw. set, 600 volts
Commonwealth Edison Co.	One 1500-kw. set, 1500 volts
Public Service Co. of Northern Illinois	One 1500-kw. set, 1500 volts
Chicago, North Shore and Milwaukee	One 1000-kw. set, 600 volts (Automatic)
Chicago, South Shore and South Bend	One 1500-kw. set, 1500 volts (Automatic)
Chicago, South Shore and South Bend	Three 750-kw. sets, 1500 volts (Automatic)

The last four units mentioned are provided with control equipment for complete automatic operation.

Although this device has not been in operation for a sufficient length of time to justify any claims of long life, its performance during the year has been sufficiently satisfactory to warrant the prediction of its extensive application to railway service.

In addition to those installed and operating, there were under construction a 1000-kw. 600-volt set for the Columbus Railway Light and Power Company; two 500-kw. 600-volt sets for the Philadelphia Rapid Transit Company; two 1000-kw. 600-volt sets in one station for the Duquesne Light Company; and a 1500-kw. 1500-volt set for the Portland Electric Power Company. This last unit will supply power to the 1500-volt railway lines of the Southern Pacific Company.

There has now been placed on the market an invention of the utmost importance in the whole field of mechanical transmission of power, which is already in successful operation and interests particularly the iron and steel mining, and allied industries. This is the "P. I. V." (Positive Infinitely Variable) which, by the simple operation of a lever or handle, allows of an infinite number of speed variations to be given from a constant speed driving shaft at any center distances with truly positive (non-slipping) transmission, to a driven shaft. In consequence accuracy of speed control can be obtained on lines hitherto regarded as impossible in all kinds of machinery and machine tool work, crushing, grading, pulverizing, conveying and elevating plant for coal, coke and limestone, in the manufacture of wire and cables, and in the operation of fans, pumps, compressors and similar equipment.

The new gear is being handled by Messrs. Close Bros., Ltd., Basildon House, London.

The "P. I. V." gear will be manufactured in the United States.

The possibilities of the "P. I. V." gear are well illustrated by the open chain drive from one shaft to another, the enclosed gear in a small space, and the A/C motor open chain drive modifications, while a remarkable development allows of a constantly varying speed being given to a driven shaft within any pre-determined cycle. Thus in one case a constant speed driving shaft runs at 300 revolutions per minute, while the driven shafts starts at 330 revolutions and gradually reduces in speed, infinitely and positively, to 270 revolutions during a speed of 50 minutes. After this the variable shaft returns to 330 revolutions during 4 seconds and the cycle recommences automatically, while the above conditions can be altered as required.

The value of the advance made can best be realized by considering the ordinary gear box as used on a motor car which in spite of the cost, trouble and loss of efficiency, only allows of a few definite speeds, generally not more than 3 or 4. Also it will be remembered that on theoretical principles an infinitely variable drive can be obtained by the use of a belt, such as two cone pulleys with belt running between guides adjustable in a transverse direction. This, however, is non-positive, that is the belt slips, and the same applies to all devices depending merely on friction such as a belt or chain between smooth face split pulleys, while of course the ordinary step pulleys

with a belt, as on a lathe and many types of machine tool, is both non-positive and non-infinitely variable.

The "P. I. V." gear is designed on the most ingenious principle and consists essentially in the use of two expanding pulleys of the opposed conical disc type, one on each shaft, connected by a chain at any desired centers, down to a few inches if necessary, so arranged that the two halves of each pulley can be moved along the shafts slightly to adjust the exact space between them. The inner surface of the two halves of the pulleys slope inward to the shaft at an angle of 30° and has a series of ribs with equivalent channels or recesses broader at the top or periphery and converging to the hub. As regards the driving chain this is of unique construction, consisting of short links built up so as to contain a longitudinal open sleeve or casing, having inside a large number of loose small thin steel plates or slats pressed together, which project at each side from the link cases, and are capable of any desired independent motion transversely to the line of travel of the drive.

During the running of the chain as a link enters the "V" between the pulleys the ribs or teeth on one pulley face push the necessary number of slats across into the spaces between the ribs on the opposite pulley face, this action being carried out easily because the flanks of the radial teeth are also inclined at an angle. Further the design is such that the rib of one pulley is always opposite a channel or space in the other in staggered fashion. In this way the drive is truly positive, that is without any possibility of slip, the ribs on the inner faces of the split pulleys acting as compound teeth which engage the chain at the edges, quite different to smooth face devices already mentioned. In order now to alter the speed ratio to any degree between the two shafts according to the range of the gear, it is only necessary to adjust the distances very slightly between each pair of split pulleys, using a common handle or lever. When the two halves of the driving unit come close together the chain rises in the grooves, giving the effect of a pulley of great diameter, while the driven pulley on being opened causes the chain to sink correspondingly deeper down in the groove towards the hub, equivalent to a smaller diameter pulley. In the same way the reverse action takes place, and the whole gear, as already indicated, may be contained in a small box partially filled with oil, which is absolutely waterproof and impervious to coal dust, heat, gases and other deleterious influences, or alternatively used as an open drive at any center distances.

As an example the 5 H. P., "P. I. V." gear, the smallest standard size, has a driving shaft running at 750 revolutions per minute and allows an infinity of speed to the driven shaft between the range of 300 and 1,800 revolutions per minute merely by the operation of a single handle, that is a 6:1 ratio, and is contained in a box 20½" x 13½" x 10". Further as regards the A/C motor drive with the motor running at 1,000 revolutions per minute an infinite number of speed variations can be given to the driven shaft thus eliminating the D/C motor and transformer, the special "P. I. V." pulleys being fixed on the motor shaft with an open chain drive to a special type of fixed pulley. Finally it may be stated that detailed tests at the British National Physical Laboratory have also just recently been carried out on the gear and the transmission efficiency is found to be 87-95% within the extremes of the above range, a highly satisfactory figure, while a large number of the gears are now at work in Great Britain.

Chromolax Electric Heaters manufactured by the Edwin L. Wiegand Company, Pittsburgh, Pa., are rapidly taking the place of obsolete steam heating equipment used around the steel plants today. The flexibility of the portable heaters built by this company, makes it possible in a few minutes, to supply heat, not only in the shop and factory, but in the (out of way places) in the industry as well.

A sudden drop in the temperature today holds no terrors for the operating man, and the pumps, the valves, in fact all the hydraulic machinery are safe with the portable electric heaters being on the job.

No dirt, no dust, no gas, no ashes, no everlasting hauling of wood, coke or coal, no men to keep up the fires, simply turn on the switch, and the portable electric heaters are one the job.

Electric Melting Furnaces

High-frequency power supplied directly from definite-pole alternating-current generators was applied for the first time to the melting of sterling silver and ferrous metals.

A special capacitor unit rated 93 kv-a., 900 volts, 2,000 cycles, contained in the same size case as the usual 5-kv-a 2,300-volt 60-cycle unit, was produced for use with a high-frequency melting equipment.

In the field of electric-arc melting-furnace equipment, the general tendency was to build furnaces of larger size, and provide for higher rates of power input. This was made possible by the use

of three-voltage switching. The principle upon which three-voltage switching is founded is that the cold charge when first placed in the furnace is capable of absorbing heat at a higher rate than after the charge has become molten; *i.e.*, with the cool metal the temperature of the furnace walls is not increased beyond the permissible value by the increase in the rate of energy input.

When the temperature of the walls has become as high as permissible, it is possible to switch to the next lower voltage tap and supply energy to the furnace at a lower rate. Finally, when this rate of energy input is also undesirably high, it is possible to switch to a still lower furnace voltage and reduced energy input, the latter change generally being made after the metal is completely melted, under which condition it is necessary to supply only the furnace losses and energy required for chemical reactions during the slagging periods. Practically all of the large electric steel-melting furnace installations in this country during the year utilized three-voltage switching.

Three of the largest three-phase transformers ever applied to an electric steel-melting furnace were built, each of these transformers being rated 9000 kv-a. for 1¼-hr.

In the manufacture of carbon brushes, a transformer to supply power to a graphitizing furnace has a range of secondary voltages of 6 to 1. This exceedingly large range of voltage was obtained by a combination of transformer and auto-transformer mounted in a single tank, the switching being accomplished by a solenoid-operated circuit breakers.

PRODUCTS OF LOW-TEMPERATURE CARBONIZATION OF COAL

The quantity and quality of the carbonization products of coal depend on the type of coal used and the heat treatment the coal receives in the process, states the Bureau of Mines, Department of Commerce. High-temperature processes yield hard cellular coke and crack the primary tars into fixed gases, aromatic light oils, and viscous tars containing phenols, cresols, anthracene, naphthalene, and other aromatic compounds. Low-temperature processes yield softer semicoke, which retains 7 to 15 per cent of volatile matter, and also yield uncracked and but slightly decomposed primary tars and oils containing paraffins, naphthalenes, cresols, xylenols, and higher phenols. The volume of the gas is only one-fourth to one-third that obtained in high-temperature coking, but the calorific value per cubic foot is almost twice as high. From both processes the quantity of light oil suitable for motor fuel is about the same, but the composition of the oil is quite different. The low-temperature process yields saturated and unsaturated paraffins, hydrocarbons, naphthalenes, and complex aromatic hydrocarbons; the high-temperature process yields benzol, toluol, and xylol.

The total yield of tar at low temperatures is about twice that obtained at high temperatures, but the ammonia yield is only one-third to one-half as much.

These comparisons apply to externally heated retorts. Internal heating dilutes the light oil vapors to a point where recovery is impracticable by present methods and produces large volumes of gas of low calorific value.

Results of observations of various processes for the low-temperature carbonization of coal are contained in Bureau of Mines Technical Paper 396, by A. C. Fieldner, which may be obtained from the Superintendent of Documents, Washington, D. C., at a price of 15 cents.

Power experts and railway economists who are watching the development and the increasing use of the oil-electric locomotive on American rails foresee a day in which this latest motive force in railroading may bring about the gradual elimination of the roundhouse.

David Louis Jones, instructor in the Diesel Engine Department of the United States Submarine School, who has made an exhaustive study of the possible effect of the use of the oil-electric locomotive on the rails of America, some of the conclusions of which are in his authoritative book on oil engines, says of this type of locomotive, "It is ready for instant service; it makes possible the elemination of roundhouses, coaling plants, ash pits, turn tables and hostling services—all of which are required for steam locomotives."

The steam locomotive is available from eight to ten hours a day and spends more than half of its time in the roundhouse, having its boiler and flues cleaned out and other troubles attended to. The oil-electric locomotive is able to operate a full 24 hours. It does not need to spend time in getting up steam. Its engines can continue running without stop, day in and day out.

Figures made public recently by the Chicago and North Western Railway, which operates two oil-electrics at the business pier district of Chicago, show a daily average of repairs of sixty-three cents for each locomotive, as against $16.20 for a steam locomotive engaged in the same work.

These savings, together with an economy of from 60 to 75 per cent in fuel cost, impel economists and engineers to foresee the gradual, general use of the oil-electric, and, with it, the possible eventual disappearance of the roundhouse from American railroading.

Oil-electric locomotives, the product of the Ingersoll-Rand, American Locomotive and General Electric Companies, are now in use on nine railroad systems throughout the country, while other systems have ordered one or more of them.

The Pittsburgh District and the members of the Association of Iron and Steel Electrical Engineers lost one of its leading engineers in the passing of Mr. Herbert MacVaugh, District Manager for the Cutter Electrical & Manufacturing Company.

Mr. MacVaugh joined the Cutter Company in 1901 after graduating from the Northeastern Manual Training School in Philadelphia. He was employed in the Engineering Department for three years, and spent one year in the Machine Shop.

In the fall of 1905 he was sent to Pittsburgh to assist Mr. Harry Darby. In 1909 Mr. Darby was transferred to the Chicago territory and Mr. MacVaugh became the Pittsburgh Manager, which position he held until the time of his death.